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ABSTRACT

The proceedings of an institute held to perform an indepth study of articulation problems in selected occupational areas (health occupations, electricity, electronics, and business education--accounting, office practice and procedures, and data processing) in the schools of Hawaii are presented. The ultimate objective was to propose a written articulation agreement for each occupational program for adoption by the community colleges and the State Department of Education. The sections of the report are: Foreword; Introduction; "Articulation in Vocational Education" by Dr. George K. Ikeda; Team Reports (business education, electricity, electronics, and health occupations); and Appendixes (Evaluation, Additional Attendants by Island, and Brochure Copy). (DB)

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COLLABORATIVE ROLES AND FUNCTIONS
OF
OCCUPATIONAL EDUCATION PROGRAMS

October 1973-June 1974
Honolulu, Hawaii

Edited By:

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and
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A FINAL REPORT
ON A PROJECT CONDUCTED UNDER
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INSTITUTE FOR ADVANCED STUDY IN VOCATIONAL-TECHNICAL EDUCATION

Education Professions Development Act
Part F
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FOREWORD

National recognition greeted last year's pioneering accomplishments in the horizontal and vertical articulation of secondary and post-secondary programs in Food Services, Drafting, Automotive Mechanics, and Business Education (Typing and Shorthand). In recognition of the quality of the previous year's results and the continuing need for articulation, the U. S. Department of Health, Education and Welfare, Office of Education, provided additional funds from Part F, Section 553, of the Education Professions Development Act (EPDA) to expand the initial efforts to other occupational programs. This report represents the results of this second year of intensive articulation meetings and discussions.

The articulation institute this year drew together students, teachers, and administrators from Hawaii's secondary schools and community colleges. First, they identified the problems the student encounters as he moves from the secondary school to the community college in the areas of Health Occupations, Electronics, Electricity, and Business Education (Data Processing, Office Practice and Procedures, and Accounting). Then applying the expertise that teachers in each field and the administrators of the system have, extensive recommendations were drafted to resolve the problems. Over 200 participants spent innumerable hours of their own time in this project; the results point to such exemplary dedication.

The vocational-technical education profession and the Office of the State Director for Vocational-Technical Education acknowledge their gratitude to each participant, and particularly to each of the four teams whose members are recognized elsewhere in this report. Particular recognition is extended to the team leaders who coordinated and provided leadership for each respective team. These individuals are: Sanae Moikeha, Jacqueline Johnson, and Barabara Nakagawa in Health Occupations; Larry Inaba, Tom Arakaki, and Raymond Kamaura in Electronics; Frank Kanzaki, Aaron Ahn, James Lee, and Marvin Poyzer in Electricity; and Richard Aadland, Wendy Figueira, Florence Sakai, Bessie Taniguchi, and Joseph Dano in Business Education.

Special appreciation is extended to Mrs. Emiko Kudo of the State Department of Education for her extensive involvement and support, and to Mrs. Dorothy Crittendon for serving as the evaluator for the project.

Samson Shigetomi

SAMSON S. SHIGETOMI
State Director for Vocational Education
University of Hawaii

INTRODUCTION

The purpose of the institute was to continue the indepth study of articulation problems in selected occupational areas (Health Occupations, Electricity, Electronics, and Business Education--accounting, office practice and procedures, and data processing) in the schools of Hawaii. Team leaders, selected from the teaching and administrative ranks of Hawaii's secondary and post-secondary institutions, provided the expertise in the field and knowledge of national, regional, and local programs and trends, upon which the participants based their discussions of the articulation needs in the schools. The ultimate objective was to propose a written articulation agreement for each occupational program for adoption by the community colleges and the State Department of Education.

PROGRAM OF STUDIES

Phase I - On November 23-24, the participants gather for an orientation session, to hear student panels discuss articulation problems the students had encountered, and to further define the articulation needs in each occupational area. Each participant returned to his campus to carry out informal studies and discussions with colleagues to further clarify the problems.

Phase II - For four days--from January 2 through 5--the participants met in all-day sessions to further clarify the articulation needs by utilizing the input each participant received at his institution, and to prepare a preliminary draft of recommendations to meet the problems.

Phase IIa - The draft recommendations were printed and distributed state-wide. Team leaders went to workshops on each of the State's four major islands to discuss the drafts and to get both positive and negative feedback from the teachers and administrators of the occupational programs at each school on each island.

Phase III - On April 8-11, the participants again gathered and, with the input received from the workshops, set about writing the final drafts of the team recommendations in the form of an agreement, one for each area. On the final day, each team presented its recommendations to a large audience of dignitaries and educational leaders from throughout the State. This report is a compilation of each team's report and recommendations.

From this point, the recommendations go to the State Department of Education, the community colleges, and the State Board for Vocational Education (the Regents of the University of Hawaii) for consideration and adoption.

The planners of this project incorporated some unique and important factors in the institute. First, four different areas of vocational-technical education were brought together, recognizing that while different, each area had shared similar problems which only groups could attempt to solve together. Second, the teams and participants represented the University of Hawaii-Manoa, the State Department of Education, the community colleges, and the administrative and instructional staffs of each level, for the purpose of sharing the leadership in developing the institute in each of the four areas. Finally, representatives were invited to participate from all geographic districts of Hawaii.

Probably the finest tribute to the effectiveness of the institute over the past two years was the fact that the University of Hawaii imitated the institute by bringing together faculties from selected liberal arts areas of the University and the Community Colleges for the purpose of better articulation.

The participants admirably rose to the fact that Hawaii's students deserve the smoothest possible transition from secondary schools to the community colleges, between secondary schools, and between community colleges, without undue repetition of course content, requirements, and other impediments. Differences in philosophy and approaches arose, but the participants noticeably shunned the attitude which characterizes some educators--"do it my way, or not at all." The friendship and collegiality which developed between participants cannot help but benefit those for whom education is intended--THE STUDENTS. The shared knowledge and the desire to implement the recommendations which the participants now have can not help but smooth the path of today's and tommorrow's students.

ARTICULATION IN VOCATIONAL EDUCATION
Remarks by Dr. George K. Ikeda
Articulation Institute
November 23, 1973

INTRODUCTION

With everyone's credibility under question these days -- I had some qualms about coming before you to speak on the subject of articulation because you as instructors or administrators know more than I do about the problems which will be discussed in this series of workshops. But having worked closely with Vocational Educators for two years now -- I could not resist this opportunity to make some of my observations known.

There are three questions, which I would like to ask and maybe answer here this morning in the course of my speech. They are: Why Articulation in Vocational Education? Why You? and Why the Delay?

I. WHY ARTICULATION IN VOCATIONAL EDUCATION?

If I asked each of you the purpose of our meeting here, I am sure I would get a variety of responses. Most of you would probably tell me that we are here to develop articulation agreements between the secondary and post-secondary vocational programs and also to share ideas. Well, these are certainly part of the objective we hope to attain in the course of the workshops, but we are really seeking a wider goal in this endeavor.

Sometimes, I think we lose our sense of perspective in workshops. We are not having meetings merely for the purpose of articulating. We are trying to meet a broader goal -- which is simply, the goal put forth in the State Master Plan for Vocational Education, that is: to maximize the potential of the individual and to meet the needs and requirements of a productive society. Let's think about that for a minute.

First, to maximize the individual's potential -- we are not doing it for your sake, or the sake of institutional integrity, or because any legislator said we had to do it -- we are doing it for the individual so he will benefit. Achieving articulation is not limited to Vocational Education -- it is everybody's problem throughout education. It is both vertical and horizontal. Somewhere I heard that articulation meetings between the Community Colleges and the four-year Manoa Campus compared unfavorably to the Paris Peace Talks on Vietnam both for their length and the record of accomplishments. Well, that's one example of vertical articulation. There is also the problem of horizontal articulation from one institution to another at the same level. And then, of course, we have that aspect of articulation that concerns us here between the DOE secondary schools and the Community Colleges.

If Articulation is everyone's problem why are we concentrating on Vocational Education in particular? What makes Vocational Education so important that we devote almost a whole school year to articulation in just four areas?

To answer this -- let's return to the goal of Vocational Education I mentioned earlier -- to maximize the individual's potential and, this is important, to meet the needs and requirements of a productive society. That means jobs. It means providing a skilled, intelligent, capable individual to fill the ranks of the employed at all levels. Let's look at some figures.

The U.S. Department of Labor reports that 80 percent of the job opportunities in this decade will not require a four year college degree. Despite this, we find nationally, that over $30 billion dollars will be spent on higher education with some nine million students enrolled in colleges and universities. Last year perhaps 30,000 Ph.D.s were graduated from our universities with limited prospects for employment. It is also estimated that by 1980, there will be a surplus of a million and half school teachers nationally. We already have a surplus of lawyers, and I saw recently where Asst. Secretary of Health, Dr. Charles Edwards announce we can anticipate a surplus of medical doctors by 1985. At the same time, the Dpeartment of Labor reported annual openings nationally for 19,500 plumbers and pipe fitters and over 20,000 openings for electronic computer operating personnel.

Let's take a look closer to home. In Hawaii, the projected total manpower needs, including growth and replacement needs, between 1972-1978 include 38,000 clerical workers, 34,000 service workers, 19,300 craftsmen and foremen and 9,400 sales workers. How many of them will get their start through Vocational Education in our secondary and post-secondary schools? -- a good proportion, I would guess. This is why Vocational Education articulation is important -- because we are ultimately preparing the individual for the employment market in our society.

Articulation isn't something we just invented as a need last year so that we could hold a workshop. It has been a need ever since we began re-examining the total Vocational Education program in the State ten years ago. Five years ago, when the State Master Plan for Vocational Education was completed, articulation was put forth as one of the top priorities for both the DOE and the Community Colleges to implement. Since 1969, every evaluation report issued by the State Advisory Council on Vocational and Technical Education has emphasized the continuing need for attention to articulation. This year's legislative budget bill again reminded the Community Colleges to articulate their programs with the DOE.

So in all the ways that I have tried to stress here, Articulation in Vocational Education is important. In examining your programs and making recommendations, remember that it is not merely your objective to get the individual from high school to the community college -- it is ultimately to get him into the job market and this should be an unimpeded process.

II. WHY YOU?

Let's move on now to the question: Why You? Why are you here participating in this conference?

Frankly, I can't think of anyone more qualified than you people who sit here. For too long, we have had consultant after consultant come in and tell us what we are doing wrong, and how things can be improved -- and it is only now dawning on us that we've been asking the wrong people.

You heard the definition of a consultant.

"Consultants are people who borrow your watch and tell you what time it is, and then walk off with the watch."

Well, I'd like to add something else. "They probably go out and resell that same watch."

In 1970, the last time a survey was conducted, it was documented that in the two-year period 1967-1969 over eight million dollars was spent by the State government on various consultant services. I can only guess how many of those studies are collecting dust on some shelf.

At a recent meeting of the State Vocational Education Coordinating Council, last year's articulation studies came in for some well-deserved words of praise. Then Chairman of the State Board for Vocational Education, Stuart Ho, commented that the project study was one of the best things he had read while a member of the Board. His reason -- because the study was conducted by the instructors themselves, they were the experts. I think that high regard is pretty much shared by all of us who have had the opportunity to review last year's work. We can only expect as well from this year's effort.

In looking over the literature which was sent out in conjunction with this conference, I note that the project refers to you participants as "Change agent multipliers". Well, fancy jargon or not, it is certainly a recognition that you are the key people who will return to your institutions and promote some of the ideas exchanged here.

So much of what we read in the newspapers today from the Tax Foundation and others seems to dwell inordinately on how much you teachers or other State employees will be earning in five or six years under collective bargaining and who will or will not get paid to attend PTA meetings or other extra-curricular gatherings. Not much attention is being paid to the fact that you are here to develop a program which would cost the State thousands of dollars if we had employed a consultant or management team. I wonder if anyone has ever stopped to recognize that there can be no better bargain than what we're getting from you -- all for the price of a lunch -- that has truly got to be one of the better examples of dedication in the annals of State government history.

For this I congratulate you and admire you for your interest.

III. WHY THE DELAY?

I have tried to answer two questions so far - Why Articulation in Vocational Education? and Why You? There is a third question that needs to be asked and that is Why the Delay? This is no doubt in the back of all your minds -- it certainly is in back of mine.

If all that we've said about articulation and last year's activities is valid then what has happened to the proposed agreements? What happened to last year's studies? Are we just participating in a meaningless paper exercise that will gather dust along with other studies?

The question is a fair one -- and I have only a partial answer.

When the wrap-up session was held last April for the articulation workshops, there seemed to be a lot of optimism that everyone had done a great job and some definitive action was in order. Now six months later we are asking, why the delay?

I share everyone's impatience but let's look at some of the hard facts of bureaucracy. Vocational Education is a part of two separate educational systems -- higher and lower. Therefore, two separate board approvals are needed, that of the Board of Regents, and the Board of Education. Before recommendation for approval is made, the policies need to be reviewed by provosts and district superintendents and Statewide administrators in both departments. This all takes time - not that time should be the big excuse.

Another reason, I suspect, is peculiarly an affliction that strikes you participants when a series of workshops is completed. That affliction is apathy. Remember you are here because you are key personnel to bring about the needed changes.

Every instructor or participant in this series of workshops shares a special mission. It is not enough to say you participated in this program, made your input, wrote your report and submitted your recommendations. You need to stay with it and make sure that somebody will act on your recommendations. I do not know the track record of last year's participants but I do know, things would move faster if you all pushed harder.

Too often, in some of my work with the Council in going around campuses, I have talked to instructors who tell me, that they are powerless to get anything done. I suspect if there were less inertia and more activity on your part some of these things would move -- just do your share and don't blame everything on the administrators or somebody up there.

How do you go about this? There are a number of ways and I recommend you try all of them if you want things to work.

First, try your school administrators. Talk to them about this articulation effort as you work on it during the year and once it is finished. Your administrators are the first and most frequent contact for change and yet very often they suffer a lot of abuse and are the target for your discontent. Right now when they face fiscal austerity, hiring freezes, and pressures from the community and students, it is a remarkable thing that an administrator is willing to stop and listen.

My point in all this is that he is one of your first contacts for implementation, despite the fact that on occasion he may seem so burdened with other things that he might not appear to have the time. Call his attention to your articulation efforts, let him know what is being done, and ask for his support and help.

The school administrator, remember, is only one link in this chain and by no means the decisive one but he is one who is accessible to you. Another is your professional group. How many of you have tried actively to enlist your fellow professionals to help promote articulation by asking them to act as a group and communicate their interests and concerns to the district superintendents, provosts and board members? My own observation is that if organizations like the Hawaii Business Education Association, Hawaii Industrial Arts Association or the Hawaii Practical Arts and Vocational Association were actively involved in pushing these articulation agreements, bureaucratic processes would move a little faster.

Another contact is your advisory committee. Have any of you gone to the union or business or industry representatives asking them to support your moves for articulation? Have you stressed the importance of your activities to their interests and that of the community at large by pointing out that articulation will ensure that the individual will be an effective employee upon completion. If not - I hope you will.

There is some good news to report (as was previously announced to you). The State Vocational Education Coordinating Council Reccommended unanimously three days ago that the Board for Vocational Education accept last year's articulation package and urge that the Board of Education - on behalf of the DOE - and the University encourage the implementation of the articulated programs throughout their respective systems.

I think the biggest hurdle here is lag time.

No implementation guidelines or phased-in schedules were worked out last year. I suggest that you develop an implementation schedule as part of this year's package. It should be a realistically scaled implementation -- based on what is practical and possible given current fiscal and perhaps political constraints. But you again are the best judges of how soon something can take place.

With that kind of a framework -- it will be a little easier for administrators and the boards to set the policies and bring about the objectives we are seeking.

Before I end this, I think it's customary to give a little pep talk -- because I am not sure all that I have said here is going to be inspiration enough and will fortify you for the workshops ahead. So in life's darker moments when you seem not to be able to come to agreement, remember that you are part of a pioneering effort. You are moving faster and getting more accomplished than any other groups involved in articulation. Last year's group pulled through in fine shape and so will you.

Thank you very much.

APPENDIX I

EVALUATION

An Evaluation of the Institute for Advanced Study in Vocational-Technical Education was based on a 29-item questionnaire distributed to participants on the last two days of the Institute. Twenty-five questionnaires were returned out of the 64 distributed for a response rate of 39.1%.

The following evaluation is based on the data obtained from the questionnaires:

Background

1. Although participants in the Institute represented a wide cross-section of personnel in the educational system in the State of Hawaii, four out of five respondents were from the community colleges and public high schools. This indicates that most of the respondents were from the public secondary and post-secondary schools in the State.

"Present Employer"	Number	Percentage
Community College	13	52.0%
Public High Schools	6	24.0%
DOE-State Level	2	8.0%
Private High Schools	1	4.0%
University of Hawaii-Manoa	1	4.0%
University of Hawaii-Hilo	1	4.0%
Private Colleges	1	4.0%

2. Three out of four respondents described their primary duty as that of teaching, whereas one out of four were employed in some type of administrative capacity. This indicates that most of the respondents were teachers.

"Primary Duty"	Number	Percentage
Teaching	19	76.0%
Administration	4	16.0%
Department/Div. Chairmen	2	8.0%

3. Roughly one-half of the respondents were in Business Occupations, and the remaining one-half were in Electricity and Electronics. The Health Occupations were not represented in the questionnaire. This indicates that the vocational fields of the respondents were approximately equally distributed between Business and the Electricity-Electronics.

"Primary Vocational Field of Interest"	Number	Percentage
Business Occupations	13	52.0%
Electricity	11	44.0%
Electronics	1	4.0%
Health Occupations	--	--

4. Roughly one-half of the respondents were from the island of Oahu, and the remaining one-half were from the Neighbor Islands. This indicates that there was an approximately equal distribution of Oahu and Neighbor Island participants.

"Island Where Employed"	Number	Percentage
Oahu	12	48.0%
Hawaii	7	29.0%
Kauai	4	16.0%
Maui	2	8.0%

5. Approximately four out of five respondents had little or no previous experience in formal articulation. This indicates that most of the respondents were provided with their first formal articulation experience at the Institute.

"Prior Experience in Formal Articulation"	Number	Percentage
none	16	64.0%
1-2 conferences	5	20.0%
3-4 conferences	--	--
5 or more	4	16.0%

6. Three our of four respondents had been at their present duties for four years or more. This indicates that most of the respondents were experienced educators.

"Years Spent at Present Duties"	Number	Percentage
less than one year	2	8.0%
2-3 years	4	16.0%
4-5 years	5	20.0%
6 years or more	14	56.0%

Goals of the Institute

Participants were asked to evaluate the attainment of the goals of the Institute on a 5-point Likert scale. Ratings were based on the following: 5=excellent, 4=good, 3=average, 2=fair, 1=poor.

A summary of the results follows.

	Mode	Mean	Overall Rating
Goal #1 - "..updating of your knowledge of national, regional and local occupational programs and trends."	4.0	3.6	above average
Goal #2 - ".. meeting and sharing program content in your area."	5.0	4.3	good
Goal #3 - "..to prepare written articulation agreements between the community colleges and the State Department of Education."	4.0	4.0	good
Goal #4 - "..to encourage intra-institutional articulation."	5.0	3.5	above average
Goal #5 - "..to encourage inter-institutional articulation."	4.0	4.1	good
Goal #6 - "..to encourage vertical articulation."	5.0	4.1	good
Goal #7 - "..to encourage horizontal articulation."	5.0	4.2	good
Goal #8 - "..to encourage appropriate involvement of personnel..those necessary to effective articulation."	3.0	3.0	average
Goal #9 - "..to encourage the ratification and implementation of agreements of articulation."	4.0	3.3	average

The participants were also asked to rate the following:

Overall clarity of objectives and goals which were stated .."How well did you understand the tasks to be accomplished?"	4.0	4.0	good

The goals of the Institute were all successfully achieved. All the nine goals received an average or above overall rating. However, goal #8 and goal #9 were rated relatively lower than the other seven goals. Future Institute planners should reconsider the presentation of these two.

The overall clarity of the objectives and goals was rated high, receiving both a mode and mean score of 4.0 This indicates that the respondents were adequately presented with the purposes of the Institute.

Evaluation of Methods

Participants were asked to rate the various activities of the Institute "to the extent to which they were interesting and helpful to you in your work." Ratings were based on the following: 3-helpful, 2-very helpful, 1-not helpful. The results are presented below ranked in order of helpfulness.

	Percentage Marking		
	Very Helpful	Helpful	Not Helpful
Group discussions within own area	91.7%	8.3%	--
Informal discussions	72.0%	24.0%	4.0%
Preparing articulation agreements	68.0%	32.0%	--
Presentations by students	48.0%	48.0%	4.0%
Group discussions across area boundaries	40.9%	36.4%	22.5%
Island Workshops	39.1%	43.5%	17.4%
Presentations by speakers	12.5%	66.7%	20.8%

All the Institute's activities were rated either as "very helpful" or "helpful" by 80% or more of the respondents. However, "group discussions across area boundaries", "Island workshop", and "presentations by speakers" as activities for future Institutes should be reevaluated if they are to be included in future Institutes. Although all three methods received fair ratings in terms of helpfulness, approximately one out of five respondents found each method to be "not helpful". These negative ratings are relatively significant when compared to the negative ratings of the remaining four methods. Negative ratings for those four activities are either nonexistent or represent only one negative response in the total sample of 25.

Interaction of Participants

Respondents were asked to rate whether or not they benefitted from their participation in the Institute in terms of improving relationships with their colleagues. Ratings were based on the improvement of relationships across four distinct groups -- geographical, vocational, high school-community college, and teaching-administration. The results follow.

	Percentage Markings	
	Improved	Did not Improve
Geographical group	90.0%	10.0%
Vocational group	86.0%	14.0%
High School-Community College Group	94.0%	6.0%
Teaching-Administration Group	65.0%	35.0%

Interaction among participants improved the least among the teaching-administration group. One out of three respondents indicated that their relationships did not improve within this group, whereas only one out of ten indicated no improvement in the other three groups.

Given the data from this questionnaire, it is difficult to hypothesize what effect the Institute's activities had on this, if any at all. However, planners for future Institutes should consider incorporating some activity which would facilitate and enhance the interaction of these two groups as it would seem that improvement in teaching-administrative interaction is important to successful articulation.

Evaluation of Results

Final questions on the questionnaire concerned the modification of present work habits and the establishment of means for exchanging information among the respondents. The results follow.

	Percentage Markings	
	Yes	No
As a result of your participation in this Institute, have you modified your present work?	50.0%	50.0%
As a result of your contacts with participants and leaders at the Institute, have you established a means of exchanging information with any of them?	54.0%	46.0%

Participation in the Institute resulted in one-half of the respondents altering their present activities in both work habits and professional contacts.

This indicates that the formal articulation experiences of the respondents affected informal articulation behavior in half the respondents. This even break is not very significant as the probability of change in this type of dichotomous situation is 50-50. Future planners and evaluators should consider which goals and activities of the Institute will have the most effect on altering the work and communications of participants. If articulation is to be successful, then formal learning in the Institute must be transferred to the daily professional behavior of the participants.

APPENDIX II

ADDITIONAL ATTENDANTS

ISLAND OF HAWAII

HILO HIGH SCHOOL - 556 Waianuenue Avenue, Hilo, Hawaii 96720

IWANAKA, Kenneth	Teacher, Business Education
YOSHIMURA, Arleen E.	Teacher

HONOKAA HIGH SCHOOL - P. O. Box 237, Honokaa, Hilo 96727

MOELLER, Matilda	Teacher, Business Education

KOHALA HIGH SCHOOL - P. O. Box 278, Kohala, Hilo 96777

SAKAMOTO, Jerry S.	Vice-Principal

COMMUNITY COLLEGE

HAWAII COMMUNITY COLLEGE - 1175 Manono Street, Hilo, Hawaii 96720

CARVALHO, Clement	Student
CHING, Gordon T.H.	Instructor, Business Education
COSTA, Anthony M.	Division Chairman, Instructor in Machine Shop
COYUCHI, S.	Student
ERICKSON, Michael J.	Instructor in Business Education
HIRAOKA, Garrett	Student
IYO, Raymond H.	Instructor, Auto Body Repair, Painting and Machine Shop
KAWAMOTO, Gary	Student
KUROKAWA, Ronald K.	Instructor in Business Education
MATSUI, Dorothy	Instructor in Business Education
NAKAMURA, Bobby	Student
NISIE, Donald M.	Student
SHIMIZU, Yoshiaki	Instructor in Drafting
SUMADA, Mitsugu	Provost
TESEI, Hers	EPDA Intern
WATANABE, Melvin	Student
YOKOYAMA, Leatrice R.	Instructor in Business Education
YOU, Ayako Y.	Instructor in Business Education

DISTRICT SUPERINTENDENT

HAWAII DISTRICT OFFICE - 75 Aupuni Street, Hilo, Hawaii 96720

CAPELLAS, Laurence	Curriculum Specialist, Secondary Education

STATE ADVISORY COUNCIL ON VOCATIONAL EDUCATION

BECK, John

PRIVATE BUSINESSES AND PUBLIC EMPLOYERS

KANUHA, Chitose	Nurse, Department of Health
TAIKI, Charlotte	Nursing
YAMASAKI, Stanley	Electricity

ISLAND OF KAUAI

KAUAI HIGH SCHOOL - P. O. Box 511, Lihue, Kauai 96766

BURGESS, Richard	Teacher, Mathematics
MIYAHARA, Dorothy	Registrar

WAIMEA HIGH SCHOOL - P. O. Box 396, Waimea, Kauai 96796

AKITA, Shirley T.	Vice-Principal
IKEHARA, Elizabeth	Teacher, Business Education

COMMUNITY COLLEGE

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KEA, William	Member
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NAKAKURA, Harold	Vice President, Nakakura Construction Co., Ltd.
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PART F 553 PARTICIPANTS TABLE

	Hawaii	Kauai	Lanai	Maui	Molokai	Oahu	Total
Participants (with stipend)							
Business	7	5	0	5	0	19	36
Electricity	3	3	0	1	0	5	12
Electronics	0	1	0	1	0	9	11
Health	3	1	0	2	0	14	20
Total	13	10	0	9	0	47	79
Additional Participants (non-stipend)							
Business	9	3	0	8	2	8	30
Electricity	1	0	0	0	0	7	8
Electronics	0	0	0	0	0	6	6
Health	2	1	0	7	1	6	17
Other	14	12	0	9	0	31	66
Total	26	16	0	24	0	58	127
GRAND TOTAL	39	26	0	33	3	105	206

Institute for Advanced Study in
Vocational-Technical Education

September 1, 1973 to June 30, 1974

COLLABORATIVE ROLES AND FUNCTIONS OF OCCUPATIONAL EDUCATION PROGRAMS

In Cooperation with the

National Center for Improvement of Educational Systems
Career Education Branch
Office of Education

Under Part F of the Education Professions Development Act
and
The Vocational Education Division, University of Hawaii

Department of Curriculum and Instruction
College of Education
and
College of Continuing Education
University of Hawaii
Honolulu, Hawaii 96822

PURPOSE

The overall purpose of this Institute is: to furnish an opportunity for professional, administrative, and supervisory personnel to update their knowledge of national, regional, and local occupational programs and trends; to provide an opportunity for participants to meet and share program content; and to prepare written articulation agreements between the community colleges and the State Department of Education. The Institute schedules team activities, seminars, group, and individual activities in four occupational areas (Allied Health, Construction Electricity, Electronics, and Business Education fields of accounting, office practice, and data processing.) Selected private institutions will also be invited to participate in the Institute.

PROGRAM OF STUDY

The program of study includes three major phases and three subphases:

Phase I will be an orientation and familiarization with selected occupational education programs. Model programs of articulation will be discussed and reviewed. Each participant will plan, individually and in teams, a program of activities. Phase IA will include the individual preparation in written form of the nature and content of the participants' occupational education curriculum (e.g. his series of courses in electricity.)

Phase II will be a seminar and conference program to share documents prepared in Phase IA; to arrive at common goals and objectives for each course; and to formulate a written team recommendation for articulation. Phase IIA will be a series of four workshops to review the written recommendations developed in Phase II. Interested persons from the community colleges and the Department of Education will be invited to attend these workshops. Also, each workshop will review selected vocational-technical education programs.

Phase III will be a seminar and conference program to prepare final drafts of team recommendations for each occupational area in the form of an agreement. Phase IIIA will be a program of information dissemination.

ELIGIBILITY REQUIREMENTS

Participants will be selected from the community colleges of Hawaii, the State Department of Education, and private institutions. A total of 73 participants will be invited, approximately 30 from neighboring islands and 40 from Oahu. They will be key personnel who will act as "change agent multipliers" when they return to their respective positions. All participants must meet the following requirements:

1. Must be an in-service instructor, supervisor, or administrator in vocational-technical education or a related subject area.
2. Must bring his curriculum and course materials to the Institute.
3. Must be willing to attend all of the scheduled meetings of the Institute.
4. Consideration will be given to the content and quality of the applicant's academic preparation, work experience, and place of residence, in order to obtain a broad representation of participants.

5. Must participate in post-institute conferences and sessions.

Preference will be given to those applicants who show the greatest promise of sharing the Institute ideas with their associates and have leadership potential with their schools or agency. The participants selected will be those who seem to best meet the above criteria. An attempt will be made to have as many institutions as possible represented in the Institute.

SELECTION PROCEDURE

Applications will be solicited by means of this brochure. Applications must be submitted not later than November 1, 1973. Final selections will be made by a committee composed of the Director of the Institute, the project staff, and the team leaders from each area.

ACADEMIC CREDIT

Four (4) semester hours of credit will be granted to those individuals who request registration, and who satisfy the academic requirements of the University of Hawaii. Grading will be "credit-no credit." A $10 registration fee is required.

ACCOMMODATIONS

Housing accommodations will not be available. However, where possible, hotel accommodations for neighboring island participants will be planned.

STIPENDS

This Institute does not pay a stipend. However, Hawaii outer-island participants will be eligible to receive a *per diem* of $25. Oahu island participants will receive a *per diem* of $5. Transportation costs for outer-island participants will also be provided. No other allowances are covered.

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	Dr. Sanae Moikeha, Chairman, Health Education Division, Kapiolani Community College, UH
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APPLICATION PROCEDURE:

Forward the attached application form and any requests for information to:

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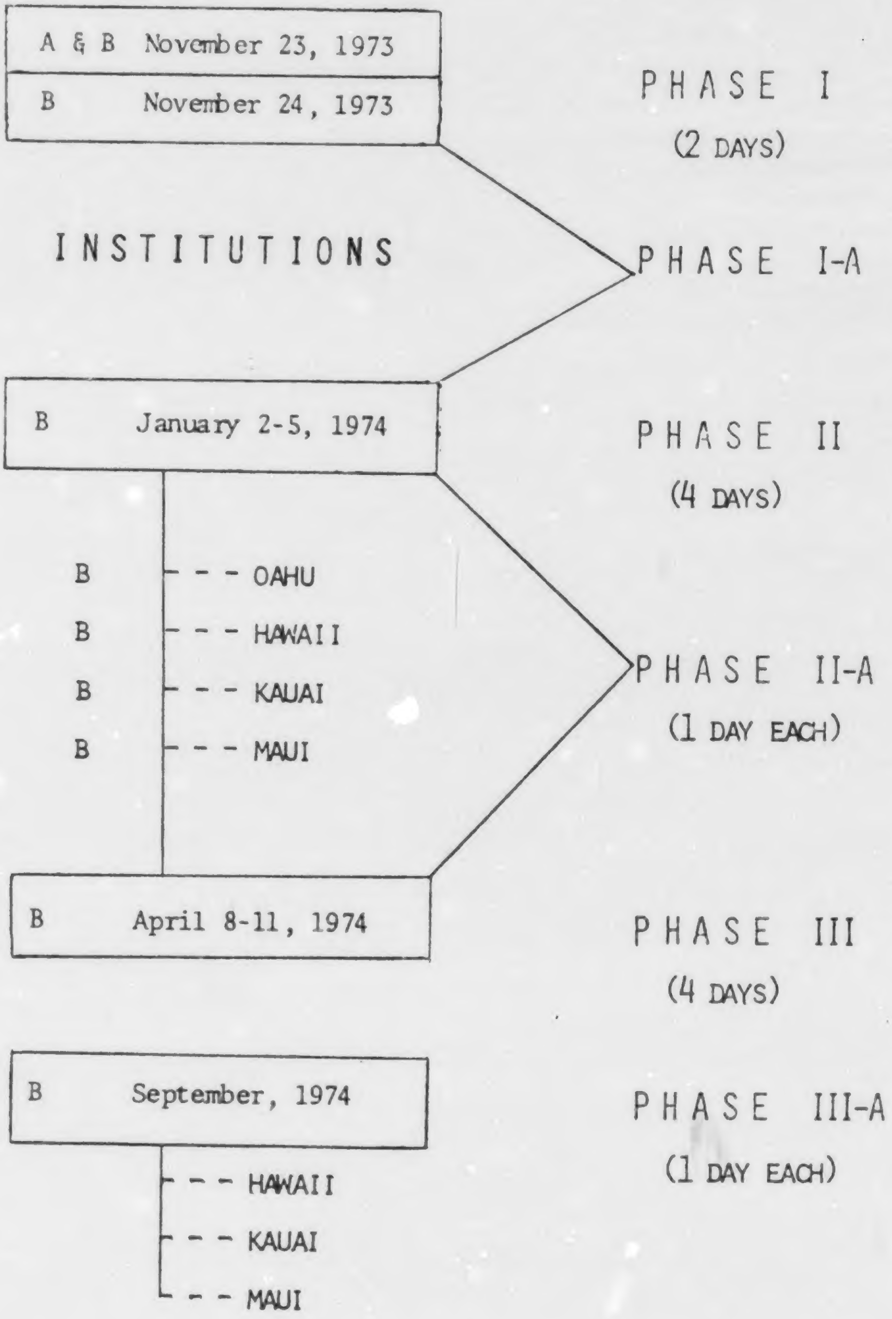
(Telephone: 948-7834 or 948-7989)

NON-DISCRIMINATION PROVISION

Title VI of the Civil Rights Act of 1964 states: "No person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance." Therefore, EPDA programs must be operated in compliance with this law.


A & B November 23, 1973
B November 24, 1973
PHASE I
(2 DAYS)
INSTITUTIONS
PHASE I-A
B January 2-5, 1974
PHASE II
(4 DAYS)
B --- OAHU
B --- HAWAII
B --- KAUAI
B --- MAUI
PHASE II-A
(1 DAY EACH)
B April 8-11, 1974
PHASE III
(4 DAYS)
B September, 1974
PHASE III-A
(1 DAY EACH)
--- HAWAII
--- KAUAI
--- MAUI

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COLLABORATIVE ROLES AND FUNCTIONS
OF
OCCUPATIONAL EDUCATION PROGRAMS

REPORT

Submitted by Business Education Team

June 1974

This project is funded under the United States Office of Education, Education Professions Development Act Part F, Section 553, and is under the sponsorship of the Office of the State Director for Vocational-Technical Education, University of Hawaii.

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PREFACE

Educational programs in both the Secondary Schools and the Community Colleges will need to be reviewed and evaluated jointly. Articulated efforts at all levels of the educational process are vital to prevent unnecessary duplication of instruction.

The recommendations presented in this document attempt to provide an opportunity for a smoother transition of curricular efforts between the Secondary Schools and Community Colleges in the areas of accounting, data processing and office practice.

The committee strongly recommends immediate implementation of the 1972-73 articulation agreement that concentrated on the areas of typing and shorthand.

GOAL OF THE BUSINESS EDUCATION
STATE ARTICULATION COMMITTEE

To promote better articulation on an on-going basis with close coordination between secondary and post-secondary institutions regarding student performance level.

OBJECTIVES OF THE BUSINESS EDUCATION
STATE ARTICULATION COMMITTEE

1. To provide course objectives to aid the student in his decision to apply for credit by examination for community college course offerings that articulate with related subjects offered at the high school level, or other experiences, in order to avoid repetition and duplication of learning.
2. To revise the vocational accounting curriculum at the high school level.
3. To identify the most urgently needed improvement to the introductory courses in computers at the high school and community college.

CURRENT STATUS

A. Secondary Schools

1. Description of current program

Open system. A student may enroll in any course at anytime during his high school tenure with the exception of advanced accounting; however, only a few schools offer advanced accounting.

2. List and description of current courses and sequence

Courses do not have to be taken sequentially, except for advanced accounting.

GENERAL BUSINESS 0910: This introductory business course develops an understanding of our American business system and its vital role in our total economic society. It develops an understanding of business practices and procedures that are basic to everyone as a citizen and consumer. Included is the study of money and banking, savings and investments, credit, purchasing goods and services, insurance, communication services, transportation services, production of goods, and postal and shipping services.

BUSINESS MACHINES 0914: This course develops basic skills in operating the most used office machines including calculators, adding machines, duplicators, and transcribers. Skills and techniques are applied in completing business problems.

* RECORDKEEPING: Included in this course are such things as writing checks, depositing money in a bank, petty cash records, preparing a budget, keeping retail sales accounts, payroll records, personal and business tax records, filing personal and business papers and recording receipts and payments for a small business.

BEGINNING ACCOUNTING 0904: This course emphasizes the production, collection, flow, interpretation, and use of financial information in a total accounting system. An understanding of how accounting relates to other aspects of business and "why" as well as the "how" of bookkeeping and accounting are stressed. The double-entry concepts underlying all recordkeeping are emphasized.

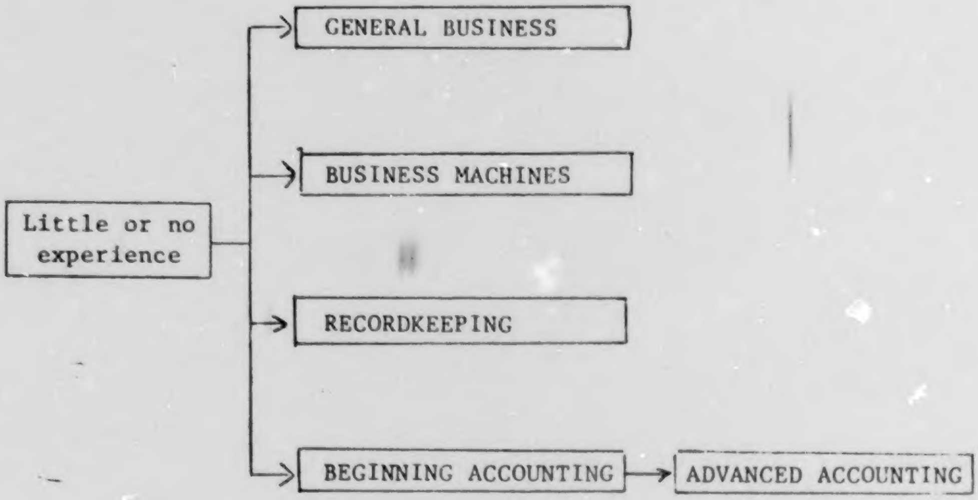
ADVANCED ACCOUNTING 0905: This course develops occupational competency in bookkeeping and accounting. Basic concepts and skills of accounting are extended through their application to a variety of increasingly complex business situations. Interpretation of financial data as they relate to management decisions is emphasized.

---

* Not available in the public schools.

THE ACCOUNTING PROGRAM

3. Current student flow chart


Little or no experience
GENERAL BUSINESS
BUSINESS MACHINES
RECORDKEEPING
BEGINNING ACCOUNTING
ADVANCED ACCOUNTING

B. Community Colleges

1. There are presently five campuses that offer accounting programs leading to a Certificate and/or Associate in Science Degree. However, each campus has its own numbering system, course titles, credits, and graduation requirements.

2. Table I lists the current course equivalencies for accounting courses of the five campuses.

TABLE I - COURSE EQUIVALENCY **

GENERAL CATEGORIES	KAPIOLANI C. C.	KAUAI C. C.	MAUI C. C.	HAWAII C. C.	LEEWARD C. C.
ACCOUNTING LEVEL I	ACCOUNTING 20, 21 FUNDAMENTALS OF ACCOUNTING	ACCOUNTING 010 FUNDAMENTALS OF ACCOUNTING	ACCOUNTING 20, 21 FUNDAMENTALS OF BOOKKEEPING PRINCIPLES OF ACCOUNTING	ACCOUNTING 20 ACCOUNTING FUNDAMENTALS ACCOUNTING 24 ACCOUNTING PRINCIPLES I	ACCOUNTING 20 FIRST LEVEL ACCOUNTING
ACCOUNTING LEVEL II	ACCOUNTING 24 PRINCIPLES OF ACCOUNTING I	ACCOUNTING 022 ELEMENTARY ACCOUNTING A	ACCOUNTING 22, 23 PRINCIPLES OF ACCOUNTING	ACCOUNTING 25 ACCOUNTING PRINCIPLES II	ACCOUNTING 21 SECOND LEVEL ACCOUNTING
ACCOUNTING LEVEL III	ACCOUNTING 25 PRINCIPLES OF ACCOUNTING II	ACCOUNTING 023 ELEMENTARY ACCOUNTING B	ACCOUNTING 24, 25, 26 PRINCIPLES OF ACCOUNTING	ACCOUNTING 40 PRACTICUM IN ACCOUNTING	ACCOUNTING 22 THIRD LEVEL ACCOUNTING
OTHERS *ELECTIVE FOR ACTG MAJORS	ACCOUNTING 30 PAYROLL ACCOUNTING 40 INTERMEDIATE ACCOUNTING ACCOUNTING 41 INCOME TAX ACTG 42 COST ACTG	*ACCOUNTING 042 PAYROLL AND INCOME TAX ACCOUNTING *ACCOUNTING 041 COST ACCOUNTING	ACCOUNTING 44 INCOME TAX PROCEDURES	ACCOUNTING 51 INCOME TAX	ACCOUNTING 50 COST ACCOUNTING

**See APPENDIX for course descriptions

STATEWIDE ARTICULATION PROBLEMS IN SECONDARY SCHOOLS AND COMMUNITY COLLEGES

A. There is unnecessary duplication of learning because of limited articulation:

1. among community colleges
2. among high schools
3. between community colleges and high schools

B. An examination is available at the community colleges for any student who has had accounting in high school and who wants to by-pass the first course in accounting. However, a great majority of students who have had accounting in high school do not want to take the examination for reasons such as: (1) fear of failure; (2) lack of information as to credit by examination process; and (3) the desire to repeat the course.

C. Adequate information and advising are not provided on accounting as a career and on course selection and sequence.

D. Course titles, numbering systems, course contents, and course objectives are not the same at all community colleges and high schools.

RECOMMENDATIONS

A. Minimum Course Objectives

1. The following are the recommended minimum course objectives for the first course in the vocational accounting (Level I) program as specified in Table I--Course Equivalency:

   General Goal: To provide instruction to the student so that he will be able to do the complete accounting cycle for a sole proprietorship, such as, a service company and a retail merchandising company.

   Specific Objectives: To provide instruction to the student so that he will be able to

   - identify basic source documents.
   - prepare bank reconciliation.
   - analyze sales, purchases, cash payments, cash receipts, payroll transactions, and journalize them in general journal form.
   - post from the journal to the ledger accounts.
   - prepare a trial balance.
   - complete an end-of-the-period work sheet including adjustments relating to merchandise inventory and prepaid expenses.
   - prepare an income statement.
   - prepare a balance sheet.
   - journalize and post the necessary adjusting, closing, and correcting entries.
   - prepare a post-closing trial balance.
   - prepare and record payroll.

2. Methods of Implementation:

   a. The minimum objectives for Level I accounting courses will be disseminated to all high school and community college instructors of applicable accounting courses and will be incorporated into their respective course outlines.

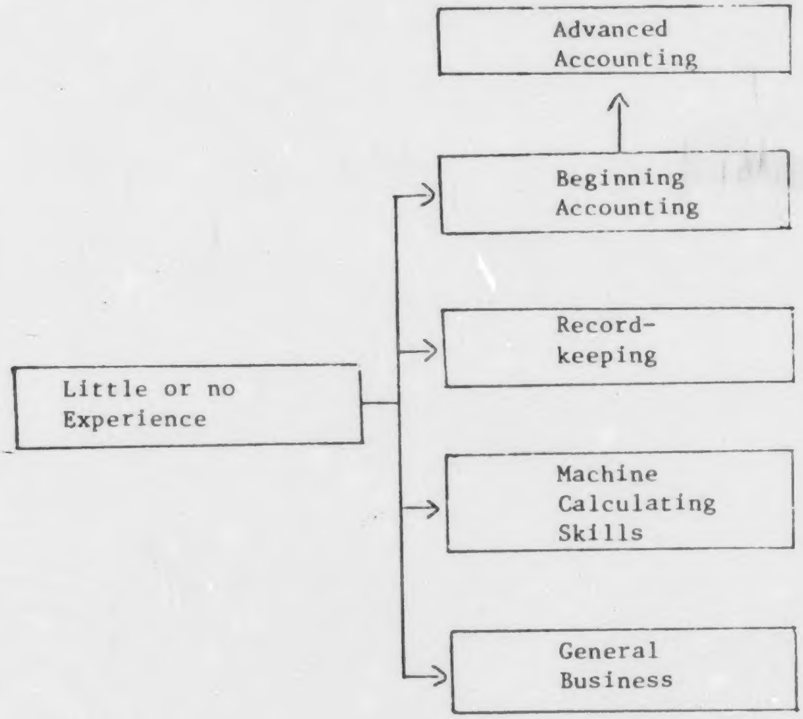
   b. The stated minimum course objectives will be given to the high school student enrolled in the beginning accounting course.

3. Method of evaluation.

   Review and evaluation of course objectives.

B. Student Flow Chart and Proposed Courses for Secondary Schools

1. It is recommended that the high school student in preparation for beginning accounting take one or more of the courses listed below:



It is recommended that a new course "Machine Calculating Skills" as described below be added to the business curriculum of the public secondary schools.

It is recommended that the course "Recordkeeping" as described below be reinstated/added to the business curriculum of the public secondary schools. Also that current course descriptions be revised as stated below.

Course descriptions:

GENERAL BUSINESS: In this course the student will be exposed to: (1) the business world and our economic system; (2) the high school student as a consumer; (3) ways to use credit effectively; (4) banks and their services; (5) different kinds of savings plans; (6) buying protection through insurance; (7) aids to protection for the purchaser of goods and services; (8) responsibilities of the citizen in a free enterprise system.

MACHINE CALCULATING SKILLS: This course is designed to provide the student with a broad background for entering the business world. Emphasis will be on the practical application of arithmetic to many common business situations. Basic business methods, principles, and concepts will be explored with stress on the use of arithmetic. A distinctive and appealing feature of the course will permit the use of many popular business calculating machines with the two-fold purpose of familiarizing the student with the machine while taking the drudgery out of business mathematics. Included in the course are such things as computing interest, working with negotiable instruments, payroll problems, determining discounts and commissions, figuring depreciation, and working problems involving taxes, securities, and insurance.

RECORDKEEPING: A course in recordkeeping is to give students an understanding of the principles and procedures for planning, managing, and recording the business transactions which most individuals are exposed to in their personal and occupational lives. The student who elects to enroll in this course will be the type of student who is interested in learning something about the keeping of records but is not interested in enrolling in a course of accounting. In addition to the personal value which this course offers, recordkeeping builds useful foundations for routine jobs in the service occupations as a delivery route man, oil station attendant, checker in a stockroom, and a cashier in a supermarket. This course is filled with many practical applications for the keeping of personal and family records and the keeping of records for a small business. Included in this course will be such things as writing checks, depositing money in a bank, petty cash records, preparing a budget, keeping retail sales accounts, payroll records, personal and business tax reocrds, filing personal and business papers and rocording receipts and payments for a small business.

BEGINNING ACCOUNTING: This is a beginning course in accounting. Activities in this course involve double-entry accounting and the principles and methods of analyzing and recording transactions, and the preparation of financial statements, and their interpretation. Emphasis is placed on the keeping of records for small businesses. In this course the student will be exposed to the following: (1) the accounting cycle in its simplest form including business transactions by source documents, journal, ledger, trial balance, income statement, and balance sheet; (2) special journal and subsidiary ledger projects are given at this time with one practice set to reinforce the learning of recording, posting, taking a trial balance, and required work at the end of the fiscal period; (3) income taxes; (4) using the combination journal for transactions like fixed assets and depreciation, disposing of bad debts; and (6) understanding partnerships.

ADVANCED ACCOUNTING: This course begins with a review of the fundamental principles learned in Beginning Accounting. In addition, this course will include advanced work in specialized types of records and a comprehensive treatment of such topics as payroll records, departmental sales, branch sales, partnership records, corporation records, and manufacturing records. In the corse the student will be exposed to the following: (1) review of the accounting cycle including journalizing, posting, business transactions, and the procedures at the end of a fiscal period; (2) departmental and payroll accounting; (3) accounting for adjustment; (4) various types of controls and records; (5) corporation accounting; and (6) interpreting and planning accounting records.

2. Methods of implementation

   a. Dissemination of information regarding this proposal to all high school business education teachers and career counselors by:

      (1) in-service training

      (2) curriculum guides

      (3) departmental meetings

   b. Dissemination of information regarding this proposal to all high school students by business education teachers and career counselors through:

      (1) group and individual counseling and advising

      (2) career development and/or social studies classes

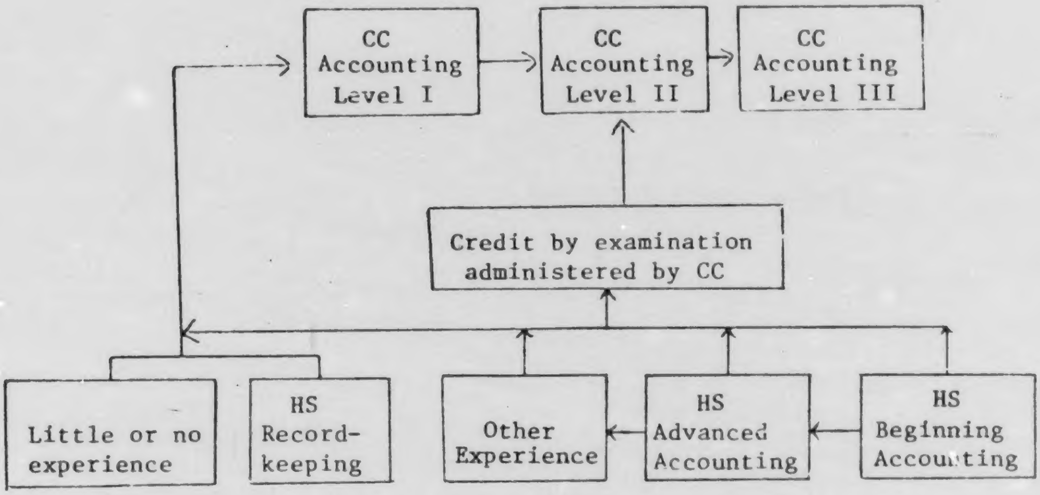
3. Methods of evaluation

   a. Review and evaluation of course objectives.

   b. Review and evaluation of the proposed curriculum after it has been implemented.

C. Proposed Student Flow Chart

1. A student meeting the minimum course objectives in Recommendation A will be able to follow the proposed flow chart as outlined below:


CC Accounting Level I
CC Accounting Level II
CC Accounting Level III
Credit by examination administered by CC
Little or no experience
HS Record-keeping
Other Experience
HS Advanced Accounting
HS Beginning Accounting

2. Methods of implementation:

   a. Examinations, based upon the minimum course objectives stated in Recommendation A, be prepared by each of the community colleges.

   b. Examinations be administered by each of the community colleges at the end of the high schools' Spring Semester to students recommended by the high school instructors.

   c. Passed examinations will be recorded and maintained by the community college administering such examinations and will also be recorded in the students' official high school records.

   d. Credit for examination passed will be awarded to the student upon enrollment at a community college.

   e. Disseminate the information on the student flow chart and credit by examination to high school and community college counselors and business education instructors.

3. Methods of Evaluation

   a. Review and evaluation of course objectives.

   b. Follow-up studies of students who have taken accounting. Studies should include those who:

(1) are successful career accountants who have completed high school and community college programs in accounting.

(2) have exercised the option to take credit by examination for courses completed at the high school and community college levels. Information in these studies must include the number of students who challenge the course, the number of students who receive credit (pass), the number of students who do not receive credit (fail), and the number of students who receive a "C" grade on the examination but who elect to take the course instead.

(3) have dropped one or more accounting courses at the high school and community college levels.

D. State Accounting Articulation Committee

1. An on-going State Accounting Articulation Committee be established both on the horizontal and vertical levels.

   a. to plan the activities pertaining to articulation among community colleges and among secondary schools (horizontal).

   b. to plan the activities pertaining to articulation between community colleges and secondary schools (vertical).

   c. to implement, where feasible, the recommendations arising from these activities.

   d. to articulate with professional organizations.

   e. to articulate with the business community.

2. Methods of implementation

   a. The Committee should be established and funded by the Office of the State Director for Vocational-Technical Education.

   b. Funds will be required to coordinate the following articulation activities:

      (1) quarterly meetings of the State Accounting Articulation Committee.

      (2) workshops, seminars, visits

      (3) meetings to effect horizontal, vertical, and other articulation activities, such as, meetings with professional organizations, and with representatives from the business community.

c. The Committee will be composed of accounting instructors and career counselors, one from each school district and each community college. It is recommended that a representative from the private schools and a representative of the Accounting Association be invited to participate. Each school district representative will initiate and follow through in the selection of SAAC members. Each community college will be asked to elect a member to SAAC. Normal terms of service will be two years, except for counselors who will serve a one year term. The Committee Chairman will serve a three year term. We recommend that each district or community college select EPDA Part F Workshop participants, 1973-1974. The initial Committee will follow the plan below:

Accounting Instructors
(Secondary Schools)

* 1. Hawaii District
* 2. Kauai District
* 3. Maui District
* 4. Oahu - Central District
* 5. Oahu - Honolulu District
* 6. Oahu - Leeward District
* 7. Oahu - Windward District
* 8. Private Institutions

* = One year term

Accounting Instructors
(Community Colleges)

+ 1. Hawaii Community College
* 2. Kauai Community College
* 3. Maui Community College
* 4. Kapiolani Community College
+ 5. Leeward Community College
+ 6. Windward Community College

* - One Year Term
+ - Two Year Term

3. Methods of evaluation

Written report to be submitted to the State Director of Vocational-Technical Education. The report should include:

a. activities undertaken by the Committee

b. results of articulation efforts by the Committee

APPENDIX

APPENDIX
COMMUNITY COLLEGE COURSE DESCRIPTIONS
Hawaii Community College

ACCOUNTING (ACC)

ACC 20 Accounting Fundamentals (3 cl. hrs.) (3 cr.)

Introduction to basic principles of bookkeeping and accounting; the bookkeeping cycle; journals and ledgers, special journals and subsidiary ledger and financial statements.

ACC 24 Accounting Principles I (3 cl. hrs., 2 lab hrs.) (4 cr.)

Double entry procedures in analyzing, recording, and summarizing transactions, and the preparation of financial statements for a proprietorship engaged in a service business or a merchandising business.

ACC 25 Accounting Principles II (3 cl. hrs., 2 lab hrs.) (4 cr.)

Prerequisite Accounting 24

Continuation of Accounting 24. Accounting for partnership; corporation accounting; and analysis and interpretation of financial statements.

ACC 40 Practicum in Accounting (1 cl. hr., 2 lab hrs.) (2 cr.)

Prerequisite Accounting 25

An independent study course for students who do not get on-the-job (CVE) training to apply accounting theory to three practice sets -- single partnership, partnership, and corporation.

ACC 51 Income Tax (3 cl. hrs.) (3 cr.)

Prerequisite Accounting 24

Tax laws, accounting procedures, and preparation of United States Federal and Hawaii State tax returns as they apply to individuals and business.

Kapiolani Community College

ACCOUNTING (ACC)

ACC 20 Fundamentals of Accounting I (4)

3 hours lecture, 2 hours lab per week

An introductory course covering the fundamentals of accounting for service and merchandising enterprises operated as sole proprietorships, partnerships, and corporation. Recommended for certificate and non-accounting programs.

ACC 21 Fundamentals of Accounting II (4)

3 hours lecture, 2 hours lab per week
Prerequisite: Accounting 20

A continuation of Accounting 20. More detailed study of selected areas including accounting for receivables, payables, merchandise inventory, fixed assets, deferrals and accruals, bank reconciliation, and simple payroll.

ACC 24 Principles of Accounting I (4)

3 hours lecture, 2 hours lab per week
Prerequisite: Satisfactory score on SCAT 1A, or Accounting 20

A basic course designed for students in accounting, open to students in other areas of business. Double-entry procedures in analyzing, recording, and summarizing transactions, and the preparation of financial statements for a service business or merchandising business proprietorship.

ACC 25 Principles of Accounting II (4)

3 hours lecture, 2 hours lab per week
Prerequisite: Accounting 24

Continuation of Accounting 24. Accounting for partnership; the elements of corporation, manufacturing and cost accounting, analysis and interpretation of financial statements and flow of funds.

ACC 30 Payroll (2)

2 hours per week
Prerequisite: Accounting 20 or 24

An introduction to the principles, procedures and terminology; and business and personal applications of payroll methods. Emphasis on Federal payroll records and forms.

ACC 34 Using Computers in Accounting

2 hours per week
Prerequisite: Accounting 20 or 24 or concurrent enrollment in Accounting 20 or 24

Problem-solving in accounting using computers. Basic accounting concepts will be reviewed as needed.

ACC 40 Imtermediate Accounting (4)

3 hours lecture, 2 hours lab per week
Prerequisite: Accounting 25

Advanced theory with emphasis on general accounting: the accounting process; balance sheet; income statement; valuation of working capital; plant and equipment and long-term liabilities.

ACC 41 Income Tax (3)

3 hours per week
Prerequisite: Accounting 20 or 24

An introduction to the principles, procedures, terminology, business and personal applications of income taxes; emphasis on individual Federal income tax records and forms.

ACC 42 Cost Accounting (3)

3 hours per week
Prerequisite: Accounting 25

An introduction to the principles and procedures of cost accounting; development and application of job order, process, and standard cost systems; manufacturing-cost controls and variance analysis.

Kauai Community College

ACC 010 Fundamentals of Accounting (4)

Class hours: 3 lecture, 2 lecture-laboratory

Accounting as applied to sole proprietorship. Fundamentals of double-entry bookkeeping; adjusting, closing and reversing entries; preparation of trial balance, work sheets, and financial statements; bank reconciliation; and payroll records and taxes.

ACC 022 Elementary Accounting A (4)

Class hours: 3 lecture, 2 lecture-laboratory
Prerequisite: ACC 010 with a grade of "C" or higher, or approval of instructor.

Theory of accounting, principles of the preparation of financial statements, controlling accounts and subsidiary ledgers, special journals, payroll, cash control, asset valuation, periodic adjustments, work sheet, financial statements, adjusting and closing entries.

ACC 023 Elementary Accounting B (4)

Class hours: 3 lecture, 2 lecture-laboratory
Prerequisite: ACC 022 or 201 with a grade of "C" or higher.

Principles and procedures relating to partnership and corporation accounting, manufacturing accounting procedures, introduction to cost accounting, budgeting and internal reporting, statement analysis, and branch and home office records and statements.

ACC 040 Intermediate Accounting (3)

Prerequisite: ACC 023 or 202 with a grade of "C" or higher.

Review of accounting rules and practices applicable to the measurement and preparation of financial condition and operating results: working capital, noncurrent items, and capital structure.

ACC 041 Cost Accounting (3)

Prerequisite: ACC 023 or 202 with a grade of "C" or higher.

Accounting procedures for measurement control of material, labor, and overhead costs; application of job order, process, and standard cost accounting methods.

ACC 042 Payroll and Income Tax Accounting (3)

Prerequisite: ACC 010, 022, or 021 with a grade of "C" or higher.

Accounting aspects of federal and state employment and income taxes and related accounting problems of payroll and income tax reporting. Emphasis on forms and records and latest social security and income tax legislation.

Leeward Community College

ACC 20 First Level Accounting (3)

The student will learn basic structure of accounting; debits and credits; classification of accounts and business transaction analysis. He will learn the accounting process for a service enterprise and a merchandising enterprise. (Requirement for Certificate of Achievement and A.S. Degree in Accounting; A.S. Degree in Management.)

ACC 21 Second Level Accounting (3)

The student will learn accounting for a departmentalized partnership enterprise, inventory systems, long-lived assets, and a corporate form of enterprise. Recommended preparation: Accounting 20 or equivalent. (Requirement for Certificate of Achievement and A.S. Degree in Accounting; A.S. Degree in Management.)

ACC 22 Third Level Accounting (3)

An advanced course in which the student will apply previously acquired accounting skills and knowledge through the completion of practice sets. Emphasis placed on payroll accounting and the total accounting process for a single proprietorship, and for a corporation. Specialized areas will be available on an individual basis. Recommended preparation: Accounting 21 or Accounting 201 or equivalent. (Requirements for A.S. Degree in Accounting.)

ACC 50 Cost Accounting (3)

The student will learn the principles and procedures of cost accounting; development and application of job order, process, and standard cost systems; manufacturing cost controls and variance analysis. Recommended preparation: Accounting 21, Accounting 201 or equivalent. (Requirement for A.S. Degree in Accounting and Management.)

Maui Community College

ACC 20 Fundamentals of Bookkeeping (2)

A beginning course in practical bookkeeping and accounting as applied to retail stores, professional individuals and firms, and to personal service operations. Students become familiar with accounting forms and practical accounting procedures. (2 hrs. lect.)

ACC 21 Principles of Accounting (2)

Accounting principles pertaining to proprietorship, use of journals, ledgers, and auxiliary records. Analyzing and recording transactions pertaining to sales and purchases. Completion of the accounting cycle. (2 hrs. lect.)

ACC 22 Principles of Accounting (2)

Prerequisite: Accounting 21, or consent of instructor.

Completion of a practice set for a sole proprietorship. Analyzing and recording transactions pertaining to receivables, payables, and inventories. Determining and recording deferrals and accruals. Amortizing and depreciating long-lived assets. (2 hrs. lect.)

ACC 23 Principles of Accounting (2)

Prerequisite: Accounting 21, or consent of instructor.

Accounting systems and internal controls used by a business firm. Use of payroll records, computing payroll, payroll tax forms, partnership organization and operation. Recording partnership transactions. (2 hrs. lect.)

ACC 24 Principles of Accounting (2)

Prerequisite: Accounting 21, or consent of instructor.

Accounting principles and problems pertaining to incorporation. Recording sales and issuance of stocks. Classification of stockholders' equity. Corporate earnings and income taxes. Cash and stock dividends. Long-term obligations and investments. Accounting for departmental operations. Recording branch operations. Completion of a practice set for a corporation. (2 hrs. lect.)

ACC 25 Principles of Accounting (2)

Prerequisite: Accounting 21, or consent of instructor.

Manufacturing accounting principles and cost methods. Use of the process cost system, job order cost system, and standard cost system. Determining budgetary controls. Completion of a practice set for a manufacturing business. (2 hrs. lect.)

ACC 26 Principles of Accounting (2)

Prerequisite: Accounting 21, or consent of instructor.

Computing and recording income taxes. Management reports and special analysis. Finds statement and cash flow. Development of consolidated statements. Financial statement analysis. (2 hrs. lect.)

DATA PROCESSING

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CURRENT STATUS

A. High Schools

The Business Education Program offers two courses in data processing, (0924 - Introduction to Data Processing, and 0926 - Computer Programming/ Keypunching), the Math Program offers a course in data processing (0343 - Computer Mathematics), and the Industrial Arts Program offers a course in data processing (1187 - Electonic Computers). (See Appendix B).

The courses offered by the Business Education Program are exploratory in nature, and are designed to orient the business student to the role of computers in processing data.

In a relatively short period of time a significant number of schools have introduced data processing courses into their curriculum, and many more schools will be introducing data processing into their curriculum within the next year or two. Because of this rapid growth, problems have been generated.

B. Community Colleges

1. There are presently six campuses that offer some computer/data processing courses. See Table I for the types of degrees offered. See Appendix A for course description.

2. Practically every campus has developed separately so that few courses have the same title, description or number. Table II shows the approximate equivalencies.

3. Since Spring, 1972 an ad hoc committee of computer instructors has met regularly to discuss topics including articulation problems, but since it is not funded, neighbor islanders rarely are able to attend.

TABLE I
SUMMARY OF COMMUNITY COLLEGE PROGRAM OFFERINGS

Type of Degree	KAP	LEE	HAW	HON	MAUI	KAUAI
AS - Business Orientation	X	X	X			
AA - Computer Science Orientation		X				
Certificate - Business Orientation	X					
Introductory Courses Only				X	X	X

TABLE II
COMPARATIVE SUMMARY OF COMMUNITY COLLEGE COURSE OFFERINGS

GENERAL CATEGORIES	KAP	LEE	HAW*	HON	MAUI	KAUAI
Computer Literacy	COMSC 100 (3)	COMSC 100 (3)	DPRO 25 (3)	[COMSC 150] (3)	[BUS 100] (3)	BUS 19 (3)
Problem Solving with a Computer	COMSC 112 (3)			COMSC 151 (3)	MATH 107 (3)	
Fundamentals of Data Processing	DPRO 130 (4)	COMSC 101 (3) #FORTRAN#	DPRO 28 (3) #BASIC#			
Introduction to FORTRAN		COMSC 101 (3)	/DPRO 46/ (3)			
Advanced FORTRAN		COMSC 120 (3)				
Introduction to RPG	DPRO 142 (3)	/COMSC 121/ (3)	DPRO 45 (3)			
Advanced RPG	[DPRO 242] (3)					
Introduction to COBOL	DPRO 241 (3)	COMSC 121 (3)	DPRO 44 (3)			
Business Problem Solving	DPRO 231 (4)					
Introduction to PL/1	DPRO 243 (3)	/COMSC 122/ (3)	/DPRO 43/ (3)			
Introduction to Assembler Language		/COMSC 201/ (3)				
Comparative Language		COMSC 122 (3)				
Data Structures	DPRO 140 (3)	/COMSC 122/ (3)	DPRO 43 (3)			
Systems Analysis & Design I	DPRO 132 (2)	COMSC 200 (3)	DPRO 33 (3)			
Systems Analysis & Design II	DPRO 246 (3)	/COMSC 200/ (3)	DPRO 46 (3)			
Operating Systems I	DPRO 140 (3)	COMSC 201 (3)				
Operating Systems II	DPRO 244	/COMSC 201/ (3)				
Business Decision Theory		COMSC 220 (3)				
Compiler Design		COMSC 222 (3)				
Internships	DPRO 150 (1) DPRO 151 (1)					
Internships	DPRO 252 (2) DPRO 253 (2-3) DPRO 254 (2)					
Keypunch	DPRO 20 (1)		DPRO 21 (1)			

*NOTES: *Hawaii has all courses (except keypunching) dual numbered e.g. 25/125
()Number of Credits for the course
[]Currently proposed course
//Course containing some of the topic, but excluding a major item
##Additional Topic

PROBLEMS AND RECOMMENDATIONS FOR SECONDARY SCHOOLS AND COMMUNITY COLLEGES

Area 1 - Financial Resources

At the current time, of course, all areas in the state are experiencing financial problems. However, it affects the computer curriculum more than others because:

Problems:
- a. Computer equipment is relatively expensive
- b. This is a relatively new program so there is no old equipment to fall back on
- c. It has been shown that to have a successful job-oriented placement program you must have hands on experience
- d. It has also been shown that to have a successful computer program you must have hands-on experience.

Therefore we need some way to obtain access to equipment which may be: unit record, batch processing and terminals.

Alternatives:
1. Continue along as we presently are
2. Get more money from the state
3. Get outside funds
4. Gain access to state facilities which may have idle time or which may be enlarged at a nominal fee
5. Gain access to private facilities (tax break to private firms)

Recommendation:
1. No advanced courses, such as 0926 (Computer Programming/Keypunching), should be offered on the secondary level until equipment is available.

2. Obtain the necessary expertise to write proposals for vocational technical funding.

3. Establish a task force to explore ways of justifying and obtaining equipment -- see exhibit A (page 28).

Implementation: Form a data processing task force immediately.

Area 2 - Secondary School Course Content

The first course about computers should provide the following: "For a computer literacy program to be optimally effective, it must occur early in the students' academic preparation, be correlated closely to their other learning and supportive experiences, contribute to their perceptions of career possibilities, and accommodate as much as possible their individual needs and expectations."[1]

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Problems: a. None of the present 3 courses (0924, 0926, and 0343)* are general enough to provide a broad background to be useful to the majority of the students. The current introductory courses are either too business or too math oriented and do not include an overall perspective on computers in today's world.

b. New courses outline required to indicate minimum coverage necessary in 0924.

Recommendation: 1. Adopt the following Course Outline

INTRODUCTION TO DATA PROCESSING
(Suggested as a 1 Semester Course)

I. What is Data Processing?
II. What are Computers?
  A. History
  B. Size
  C. Hardware
  D. Classification
III. How Do Computers Work?
  A. Memory
  B. I.O. Devices
  C. Concepts of Programming
IV. Careers in Data Processing
  A. Types of Jobs
    1. Entry Level
    2. Technical
    3. Professional
  B. Career Guidance
    1. Post-Secondary Education
    2. On-the-Job Training

V. Man and Society
  A. Influence on Society
  B. Misuse of Computers
  C. Future of Computers

VI. Computer Applications
  A. Government
  B. Business
  C. Science
  D. Education
  E. Medicine
  F. Law

2. Change course description (See Appendix B).

* 0343 (Computer Mathematics) and 1187 (Electronic Computers) was not considered by this group, however, future exploration into this area must be considered.

Implementation: Fall '75

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[1] Computers and Careers, U.S. Office of Education, Central Texas College, Killeen, Texas, 1973.

Area 3 - Instructional Improvement and Teaching Aids

> "The success of any program necessarily is dependent upon the employment of well-qualified instructors, having a command of the subject matter involved and a working knowledge of all the manipulative skills and theory necessary for the presentation of the material."[2]

Problem:

- a. Adequate teaching aids have not been catalogued and made readily available.
- b. There is presently a lack of a training program suitable to high school teachers in this area.
- c. Many other subject areas (Business Education, Social Sciences, Natural Sciences, etc.) are becoming increasingly concerned with data processing methodology, but little information is available to aid these instructors.
- d. No adequate cooperative education work experience programs are available for data processing teachers to receive hands-on experience on-the-job.

Recommendations:

1. Set up a subcommittee within the data processing task force (See Exhibit A) to locate and catalogue suitable teaching aids.
    - a. Additional AV material obtained through pooling and reproducing from current instructors.
    - b. Provide a kit of material to all high school DP teachers.
    - c. Provide an annotated list of recommended textbooks.
    - d. Provide a list of guest speakers.
    - e. Build a Library of DP materials to be distributed through the DOE.
2. Provide more university or community college short-term, intensive training courses that are designed to meet data processing instructor needs.
    - a. Course for brand new instructor or Business Education majors (An upper division Business Education course, content coordinated with data processing task force should be considered.)
    - b. Course for teachers with some data processing teaching experience to disseminate up-to-date information and provide individual project ideas.

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[2] Ibid.

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c. Course for hands-on computer operation experience

c. Courses in programming languages to include a methods course in how to teach the language.

3. Set up community college courses, and request university courses (including in-service workshops) to provide relevant computer instruction to instructors of other subject areas.

    a. General introductory course to provide information about current computer utilization with emphasis in participant subject areas.

    b. Introductory course in concepts and usage of Computer Assisted Instruction.

4. Develop On-the-job training programs with Data Processing Management Association (DPMA) in correlation with IE 497.

Implementation: Summer '75.

Area 4 - Horizontal Articulation Problems within the Community Colleges

Since each campus developed its curricula essentially independently, there is some difference in overall goals in each program. This may not always be undesirable, but it has led to cases where courses which are the same or nearly so have different numbers, titles, and descriptions.

Problems:

a. Courses with similar contents do not usually have the same number. They often are even in a different level (e.g. DPRO 25 vs COMSC 100).

b. The same topics are taught in different sequences and distributed within the courses differently, thus causing great transfer problems for students.

c. Not all topics required for a degree at one campus are so required at another.

Recommendations:

1. The current Community College Committee on Computer Matters (CCCCM)* should be funded, preferrably by the Office of State Director of Vocational-Technical Education so that members from the neighbor islands may attend meetings.

2. In the basic courses, the minimum topics to be covered be identified and agreed upon by all campuses offering the course.

3. Any further proposed changes at a campus be at least discussed with the members from other campuses to try to avoid needless duplication of work.

Implementation:

1. Target date - Fall '74

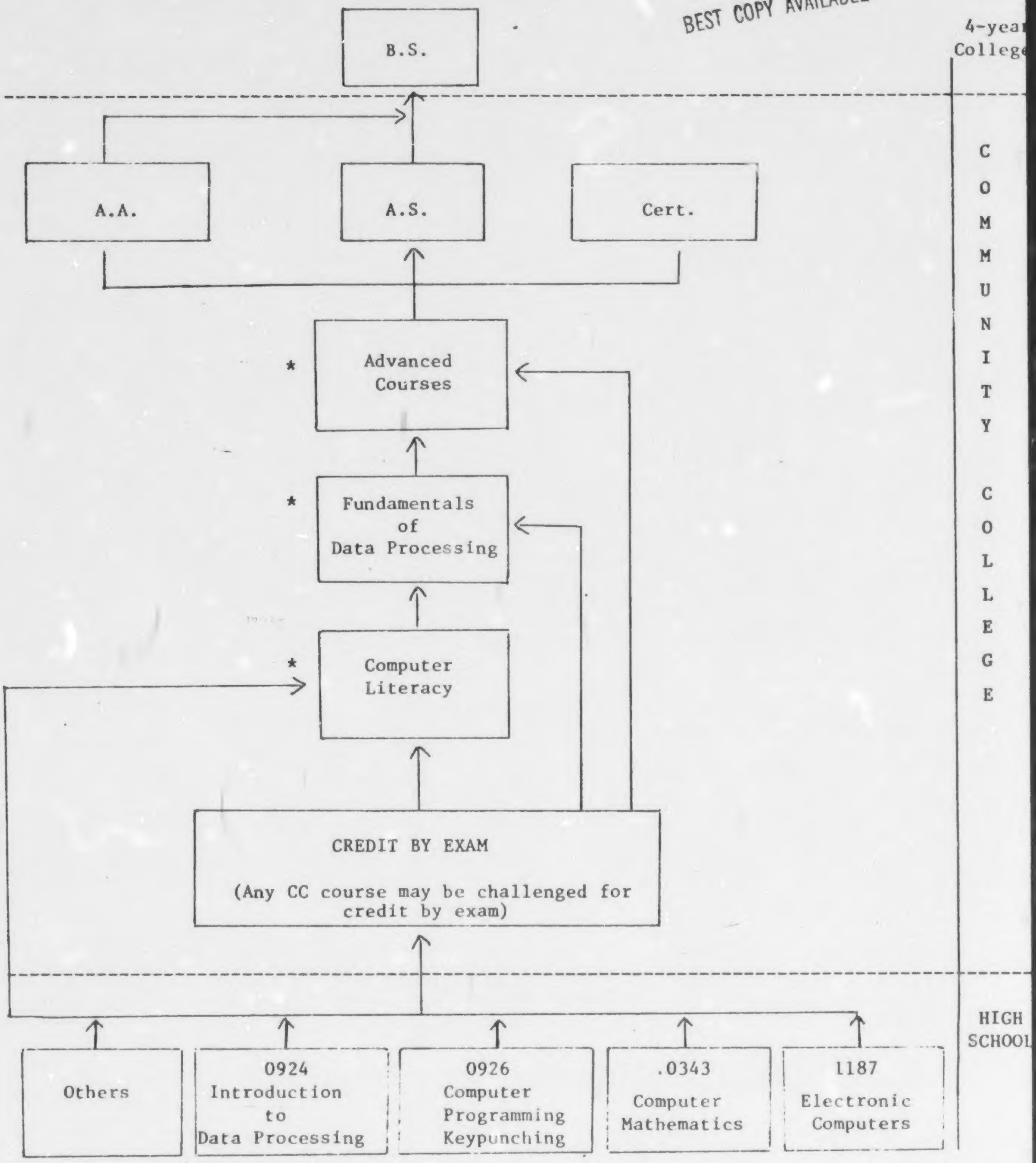
2. Target date - Fall '75

3. Target date - Immediately!

*The CCCCM is currently a subcommittee of the Council of Provosts of the Community College system. The representatives include one or more of the instructional faculty from each college which teaches computer related courses. The Oahu members meet at least once a month (average) but the neighbor island members are only able to meet when funds are available (which has averaged only one time a semester this past year).

STUDENT FLOW CHART

BEST COPY AVAILABLE


B.S.
4-year College
A.A.
A.S.
Cert.
COMMUNITY COLLEGE
* Advanced Courses
* Fundamentals of Data Processing
* Computer Literacy
CREDIT BY EXAM
(Any CC course may be challenged for credit by exam)
HIGH SCHOOL
Others
0924 Introduction to Data Processing
0926 Computer Programming Keypunching
.0343 Computer Mathematics
1187 Electronic Computers

*See Table II for Course Numbers.

EXHIBITS
AND
APPENDICES

EXHIBIT A - Definition of the Data Processing Task Force

I. Purposes

A. Develop a system in which the high schools and community colleges could best serve one another.

B. Find available funding for educational computer use.

C. Justify and obtain equipment.

D. Locate and catalog suitable teaching aids.

E. Identify any additional problems and provide recommendations.

II. Membership

A. At least 80% of the data processing articulation committee.

B. One representative from each secondary school which offers any of the following courses:

1. 0924 - Introduction to Data Processing
2. 0926 - Computer Programming/Keypunching
3. 0343 - Computer Mathematics
4. 1187 - Electronic Computers

C. One representative from each community college which provides computer training.

D. A representative from the DOE Vocational-Technical Division, Office of Instructional Services.

III. Meeting Times

A. The data processing task force will meet quarterly.

B. Sub-committees may meet monthly.

IV. Funding

A. Inter-island travel to attend quarterly meetings.

B. Out-of-state travel for two members of the task force to investigate innovative educational computer use including attendance at major conferences and observations of signigicant operating school computer systems.

C. Secretarial services.

D. Office supplies.

NOTE: In order to provide continuity and articulation with the rest of the business education subject areas, at least one member of the Business Education State Articulation Committee, which was recommended by last year's articulation committee, should be chosen from the members of the Data Processing Task Force.

APPENDIX A

Hawaii Community College

DPRO 25/125 Introduction to Data Processing (3 cl. hrs.) (3 cr.)

Designed to provide a vocabulary and general awareness of what data processing is and how it is used in today's business world. It also serves as a foundation for developing essential skills for further data processing study.

DPRO 28/128 Introduction to Programming (3 cl. hrs.) (3 cr.)

Basic programming concepts with emphasis on problem analysis, flow charting and documentation. Prerequisite: DPRO 25/125

DPRO 33/133 Business Systems and Applications (3 cl. hrs.) (3 cr.)

An in-depth study of the uses of information and data bases with specific references to the common business applications of payroll, accounts receivable, accounts payable, and inventory control, emphasis on information flow within a business; need for control of all data is stressed. Prerequisite: DPRO 44/144

DPRO 43/143 Data Structure (3 cl. hrs.) (3 cr.)

Introduction to data management techniques including file maintenance, sorting and retrieving data from magnetic tape and direct access files and a basic understanding of card, disk and tape file organization. Prerequisite: DPRO 33/133

DPRO 44/144 COBOL Programming (3 cl. hrs.) (3 cr.)

Programming of business applications in COBOL (Common Business Oriented Language). Includes program writing and "debugging" techniques with emphasis on direct access devices. Prerequisite: DPRO 46/146

DPRO 45/145 RPG Programming (3 cl. hrs.) (3 cr.)

Business application programming in RPG (Report Program Generator). Emphasis on efficient coding techniques with extensive use of direct access devices. Prerequisite: DPRO 43/143

DPRO 46/146 Systems Analysis (3 cl. hrs.) (3 cr.)

Presents the complete systems approach to data processing. Includes the collection, review, processing, and presentation of data used in business information systems. Detailed case studies of automating the essential accounting systems. Prerequisite: DPRO 28/128

Honolulu Community College

COMSC 150 Computer Principles (3)

Prerequisites: None (Math 22 or equivalent recommended).

A basic course in the fundamentals of digital and analog computers. Functional descriptions of peripheral equipment and discussion of general system operations. Introduction to programming, binary codes, algorithmic systems. (3 hrs. per week).

COMSC 151 Introduction to Programming I (3)

Prerequisites: COMSC 150 or consent of instructor.

This course will provide the skills necessary for the beginning programmer. Flowcharting, decision tables, programming logic, compilers and assemblers will be discussed. The particular language involved will vary as facilities permit (2 hrs. lect.; 3 hrs. lab per week).

Kapiolani Community College

DPRO 20 Key-Punch Equipment Operation (1)

3 hours per week

Practice exercise on the key-punch and verifying machines to develop speed and accuracy in standard operating procedures.

DPRO 130 Introduction to Data Processing (4)

3 hours lecture, 2 hours lecture-lab per week
Concurrent enrollment in Data Processing 150

The history and development of data processing, from manual to electronic systems. Emphasis is on capabilities, limitations, and applications of computer systems to business. Students will also learn to write simple computer programs in two or three different computer languages. (Course is comparable to COMSC 101 at Leeward C.C.)

DPRO 132 Business Systems and Applications (2)

1 hour lecture, 2 hours lecture-lab per week
Prerequisite: Data Processing 130
Recommended that Accounting 24 be taken concurrently

An in-depth study of the nature and uses of data and data bases with specific reference to common business applications. The concepts of information flow. The logical file structure and the need for control of all data.

DPRO 140 Operating Systems and Data Management (3)

3 hours per week
Prerequisite: Data Processing 130
Concurrent enrollment in Data Processing 151

Basic concepts of computer systems, including components, architecture, data representation, facilities of the operating system, job control, and data management principles and techniques.

DPRO 142 Computer Programming - RPG II
3 hours per week
Prerequisite: Data Processing 130

Introduction to RPG II programming. Students will become familiar with each of the features and specification sheets of RPG II. Each student will code a minimum number of problems using the features taught. (Equivalent to Kapiolani's Data Processing 42 course - 1970-73).

DPRO 150 Data Processing Internship (1)

60 hours per semester

The student will work in the campus computer center as either a data clerk, quality control clerk or keypunch operator. His work will be thoroughly supervised and evaluated by his peers and instructors. Credit for this course may be received by employment in a comparable position in an off-campus establishment.

DPRO 151 Data Processing Internship (1)

60 hours per semester

Continuation of Data Processing 150 with student employed as a quality control clerk, work scheduler, programmer trainee or equipment operator.

DPRO 231 Business Problem Solving (4)

3 hours lecture, 3 hours in learning center per week
Prerequisite: Data Processing 130

Computer programming concepts with emphasis on problem analysis, algorithm building, block diagramming and documentation. Second half of course will be directed toward reinforcing these concepts by coding sample problems in the COBOL language. (Comparable to COMSC 121 at Leeward C.C. Equivalent to Kapiolani's Data Processing 31 - 1970-73)

DPRO 241 Computer Programming - COBOL (3)

3 hours lecture per week
Prerequisite: Data Processing 231
Concurrent enrollment in Data Processing 253

Business applications programming in COBOL. Emphasis on good programming techniques and the use of direct access storage devices for input and output. All features of full ANSI COBOL will be included.

DPRO 242 Advanced RPG Systems (3)

3 hours per week
Prerequisite: Data Processing 131, Data Processing 135
Concurrent enrollment in Data Processing 252

Using RPG II language, students will build a complete system for common business application areas such as payroll and accounts receivable. Class will emphasize compatibility of programs into an integrated business system.

DPRO 243 Computer Programming - PL/I (3)

3 hours lecture per week
Prerequisite: A higher level language course

An advanced programming course applying the principles of programming to business applications using PL/I language. Emphasis on advanced file organization and maintenance and programming algorithms.

DPRO 244 Advanced Systems Concepts (2)

2 hours lecture per week
Prerequisite: Data Processing 140

A survey of larger and advanced operating systems. Assignments using system utility programs and libraries in OS environment. Planning and selecting system components. Introduction to data communications concepts including teleprocessing and interactive time-sharing.

DPRO 246 Business Systems Analysis (3)

3 hours lecture per week
Prerequisite: Data Processing 132 or consent of the department

A study of data processing systems and procedures including the advantages and disadvantages of different types of systems, card and forms design, controls, conversion techniques, and facilities planning. Emphasis on various techniques and tools of the systems analyst such as interviewing, procedure analysis, and flowcharting. (Course is comparable to COMSC 200 at Leeward C.C.)

DPRO 252 Data Processing Internship (2)

120 hours per semester

Continuation of Data Processing 151 with student employes as an equipment operator, computer programmer, or operations supervisor.

DPRO 253V Data Processing Internship (2-3)

120 hours per semester
1 hour lecture per week (for the third credit)

Continutation of Data Processing 252 with student employed as a computer operator, computer programmer, programmer/analyst or operations supervisor. In the seminar (1 elective credit), the student gain experience in writing resumes, interviewing for jobs, taking employment tests, and learn ways of looking for a job.

COMSC 100 The Computer and Its Role in Society (3)

3 hours per week

A non-technical introduction to computers and their use in the modern world. Social benefits and problems created by the computer revolution, and implications for the future. This course may be taken by the non-specialist who is interested in the use of computers in our society.

COMSC 112 "Conversations With the Computer" (3)

2 hours lecture, 3 hours Learning Center per week

A course in learning to program a computer using an interactive computer language. Each student will use the computer as a tool in problem solving. A first course in programming designed for students who have not previously studied computer language. (Satisfies the Mathematics requirement)

Kauai Community College

BUS 019 Introduction to Data Processing (3)

Basic operations, techniques, and methods of data processing by manual, mechanical, punched-card and electronic computer systems, including the history and development of data processing up to and including the electronic computer.

Leeward Community College

COMSC 100 The Computer and Its Role in Society (3)

A non-technical introduction to digital computers and their use in the modern world. Social benefits and problems created by the computer revolution and implications for the future. This course may be taken by the non-specialist who is interested in the use of computers in our society. The course is required of each student majoring in computer science, however, it may be taken in any semester of his program since it is not a prerequisite to the other courses. (Requirement for A.S. Degree in Management, Accounting, Computer Science and Library Technology.)

COMSC 101 Introduction to Computer Science (3)

A practical introduction to the theory of stored program digital computers. The emphasis is on logical problem analysis, on the internal functional characteristics of a digital computer and on FORTRAN language programming. Recommended preparation: Mathematics 26 (or equivalent). Concurrent registration is acceptable. (Requirement for A.A. and A.S. Degree in Computer Science.)

COMSC 120 Scientific Computer Programming (3)

Preparation for use of computers in solving mathematical and scientific problems. Introduction to numerical analysis, information structures and research methodology. Emphasis on the development of algorithmic processes, as well as iterative methods and matrix techniques for solving simultaneous linear equations. Application using the FORTRAN language. Recommended preparation: Computer Science 101; Mathematics 118 or equivalent. (Concurrent registration is acceptable.) (Requirement for A.A. Degree in Computer Science.)

COMSC 121 Information Storage and Retrieval (3)

The basic structure of information systems. Emphasis on data storage and retrieval. Non-numerical applications using the COBOL and RPG languages. Recommended preparation: Computer Science 101. (Requirement for A.S. Degree in Computer Science may be used to fulfill requirement for A.A. Degree in Computer Science.)

COMSC 122 Comparative Programming Systems (3)

Survey of machine-oriented, procedure-oriented, and problem-oriented languages, and their relationship to digital computer systems. Syntactic descriptions, and semantics of several classes of programming languages (such as FORTRAN, ALGOL, COBOL, PL/1, APL and BASIC). Applications using several of the major languages discussed. Recommended preparation: Either Computer Science 120 or Computer Science 121 (offered Spring semester only). (Requirement for A.A. and A.S. Degree in Computer Science.)

COMSC 200 Information Systems (3)

Introduction to the total systems concept in the design of integrated information and control systems. Central Data Base organization, maintenance and retrieval planning. Feasibility of batch processing real time and time shared systems. Applications using the remote communication capabilities of the computer science laboratory. Recommended preparation: Computer Science 101, 121, and 220 (offered Spring semester only). (Requirement for A.S. Degree in Computer Science, may be used to fulfill requirement for A.A. Degree in Computer Science.)

COMSC 201 Operating Systems (3)

Introduction to systems programming. Emphasis on assemblers, Input/Output Control Systems, service systems, supervisors, and loaders. Programs will be written using IBM 1130 assembly language. Recommended preparation: Computer Science 101 (offered Fall semester only). (Requirement for A.A. and A.S. Degree in Computer Science.)

COMSC 220 Management Decision Techniques (3)

Introduction to mathematical and statistical programming techniques for modern management decisions. Linear programming, simulation, Monte Carlo techniques. Recommended preparation: Computer Science 101 and 122 (or 121 with consent of the instructor), Math 175 (offered Fall semester only). (Requirement for A.S. Degree in Computer Science, may be used to fulfill requirement for A.A. Degree.)

COMSC 222 Computer Anatomy (3)

Theory and operation of a compiler system. Detailed analysis of a FORTRAN compiler. Student will be expected to write and debug an original compiler System. Recommended preparation: Computer Science 101 and 122; 201 (concurrent registration permitted) (offered Spring semester only). (Requirement for A.A. Degree in Computer Science.)

Maui Community College

BUS 100 Introduction to Data Processing (3)

An orientation course to provide a basic understanding of data processing principles. Topics include: Historical background, sources of data, punched card equipment, digital computers and management information systems. (3 hrs. lect.)

MATH 107 Elements of Computer Science (2)

Prerequisite: Math 50, or consent of instructor

The computer, its function, its language, its logic, its uses and its relation to man. (30 hrs. lect.)

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APPENDIX B

CURRENT COURSE DESCRIPTION FOR HIGH SCHOOL COMPUTER COURSES

0924 Introduction to Data Processing

Objectives:
1. Identify the concepts of data processing
2. Acquire a basic foundation in automated data processing that will lead to careers in electronic data processing or data processing related occupations.

Description:
Introduction to Data Processing develops an awareness of the importance of information handling and provides a basic understanding of the three methods of data processing--manual data processing, mechanical data processing, and electronic data processing. It provides a foundation for those who will be working in data processing related positions.

0926 Computer Programming/Keypunching

Objectives:
1. Apply basic principles and skills of computer programming/keypunching.
2. Prepare for advanced study in the field of computer programming.
3. Acquire fundamental skills and knowledge essential for continuing education or entry level employment in keypunching.

Description:
The programming course is designed to provide a background and a working knowledge of a computer language. The student will analyze problems, prepare flow charts, write computer programs, and have programs run on the computer. Keypunching will be offered where equipment is available. This course will provide hands-on experience with card punch equipment on two levels of proficiency. On the acquaintanceship level, the student learns the basic operation and recognizes the use of the machine in modern office procedures. On the second level, the student develops skills for entry level employment.

0343 Computer Mathematics

Objectives:
1. Develop proficiency in basic principles of mathematics.
2. Develop ability to solve problems in numerical and non-numerical situations.
3. Develop programming languages
4. Develop understanding of structure of computer operations.

Description:

This course introduces the student to the basic principles of computer operations. Consideration is given to the algorithmic approach to mathematics which enables a problem to be handled by a machine.

1187 Electronic Computers

Objectives:

1. Develop basic skills in computer principles and applications.
2. Explore and keep abreast with current research and development of electronic computers.

Description:

The study of the principles and applications of computers and their implications to our technological society. Instructional units include: computer fundamentals; introduction to analog and digital computers; number systems; electronic devices; circuits with memory; computer programming control and communications; and trends and future prospects.

APPENDIX B-1

PROPOSED HIGH SCHOOL COURSE DESCRIPTION CHANGES

0924 Introduction to Data Processing

Objectives:

1. The student shall be able to demonstrate proficiency in:
    a. identifying the concepts
    b. defining data processing terminology
    c. developing computer literacy

2. The student will explore careers in electronic data processing or related occupations.

3. The student will survey computer applications in Hawaii.

4. The student shall be able to relate the computer to their daily lives.

Description:
An introductory course covering the fundamentals of data processing vocabulary, basic descriptions of hardware and its uses, a history of hardware applications, and a survey of the functions of software. The student is oriented also to the implications of future computer technology and the interface between the computer and society. Students are given an opportunity to explore various computer and related occupations.

0926 Computer Programming/Keypunching

No advanced courses should be offered on the secondary level until equipment is available.

APPENDIX C

SAMPLE TEST FOR CREDIT BY EXAMINATION

Students entering the community college system may opt to obtain credit by examination for the course Computer Science 100, The Computer and It's Role in Society.

Directions: The following sample test below contains test items which may require a fill in the blank or multiple choice answer. Place the correct answer in the space(s) provided.

1. The person who writes instructions for the computer is called the ________________.

   a. operator
   b. systems analyst
   c. programmer
   d. none of the above

2. The computer is a creative thinker. (True or False) _____________

3. A series of actions performed on information is __________________.

   a. data analysis
   b. computer analyzing
   c. data processing
   d. computer processing

4. Data Processing is a term that is used exclusively by computer people, and means "computer processing." (True or False) ________

5. The development of the coding system used in the punch card can be credited to

   a. Charles Babbage
   b. Herman Hollerith
   c. James Powers
   d. James Jacquard

6. Electromechanical devices like the adding machines, and odometer on your car are computing devices. (True or False) ______________

7. About 3000 years ago one of the first computational devices used by man was developed. It is still in common use today, especially in the Asian Countries. It is called an _______________.

8. The first 9 letters of the alphabet all share the same ______ zone punch.

   a. 12
   b. 11
   c. 0
   d. 13

Sample Test--Credit by Examination, Cont'd.

9. The letter (C) is represented by what 2 punches? ____________

   a. 12-2
   b. 0-2
   c. 11-5
   d. 12-3

10. Each letter of the alphabet is made up of a ______________ punch and a ____________ punch.

11. The bottom of a card is called the _____________ edge.

   a. 12
   b. 1
   c. 80
   d. 9

12. Rows are _____________________ . (vertical or horizontal)

13. How many rows are there in a punch card? _____________

14. The card processing machines can distinguish between different colored cards. (true or false) _____________

Use the following multiple choice answers for questions 15-19.

   a. reproducer
   b. collator
   c. sorter
   d. verifier
   e. card-punch machine

15. The machine that will reproduce (copy) information from one deck of cards into another is called a ____________ .

16. The machine that merges (combines) two groups of in-sequence cards into one group in-sequence is called a _______________ .

17. The machine that arranges cards into a desired sequence is a card ______________ .

18. The machine that is used to check the punching accuracy is called a _______________ .

19. The information is punched onto cards on a ___________ machine.

20. All columns of a card must always be used. (true or false) ____________

21. Pre-assigned adjacent columns in a card that are used to designate things like NAME, ADDRESS, CITY, STATE, etc. are called ______________ .

22. Information to be punched onto cards come from a ____________ document.

23. Which classification of computer measures? (analog or digital) __________.

24. Which classification of computer counts? (analog or digital) ____________

25. Early third generation computer process in __________ of a second.

    a. millionths
    b. billionths
    c. trillionths

26. In punch card data processing one machine was designed to do all the various types of card processing? (True or False) ________________

Use the following multiple choice answers for questions 27-29.

a. transistorized circuits
b. solid logic miniaturized circuits
c. vacuum tubes

27. First generation computers are characterized by electronic ___________ .

28. Second generation computers are characterized by electronic ___________ .

29. Third generation computers are characterized by ____________ .

Use the following multiple choice answers for questions 30-33.

a. operator
b. programmer
c. keypunch operator
d. systems analyst

30. A computer ______________ runs the computer.

31. A ___________ writes the instructions to the computer.

32. A ___________ punches cards on a keypunch machine.

33. A systems ____________ makes a "plan" for computerizing the job.

Use the following list on the right for questions 34-38.

a. hardware
b. input
c. software
d. output
e. control
f. process
g. storage
h. arithmetic logic

34. What are the two sections in the CPU? ________ and ________

35. What is the physical machinery that comprise a computer system called? ______________

36. What are the four main functions of an EDP system?
_________ , __________ , ________ , and _________ .

37. What type of device converts human readable data into electronic pulses that the computer can read? ____________

38. The man set of instructions (a program) is also called ___________ .

39. Name two peripherial magnetic storage media.

    a. tape
    b. punch cards
    c. drum
    d. print out
    e. disks

40. The small donut shaped magnets that are used to store data are called cores. (True or False) ____________

41. Which is faster; main storage or peripherial storage? __________

42. The number 36_8 is stated in what number system? ______________

43. The number 2A6 can only be in the __________ number system.

    a. binary
    b. octal
    c. hexadecimal

44. In the number 1056, the digit 6 is (most, least) significant. ________

45. BIT is short for ____________ .

46. How many digits are used in the hexadecimal number system? ___________

47. The program the computer is using, along with the data being processed is stored in _____________ .

    a. main storage
    b. peripherial storage

48. A modern electronic computer can perform _________ additions per second. (approximate)

    a. hundreds
    b. thousands
    c. millions

49. The person who writes and maintains the computer software is called the

    a. programmer
    b. computer operator
    c. systems analyst

50. Place an (x) in the space(s) provided which are advantages of magnetic tape over punched cards.

    ______ more compact
    ______ human readable
    ______ random access
    ______ faster to access
    ______ sequential storage only

51. Place an (x) in the space(s) provided which are advantages of magnetic disc over magnetic tape.

_______ random access
_______ interchangeability between machines
_______ cheaper
_______ compact

52. Which of the following does not match the I/O device and it's media correctly. _________

a. magnetic tape - tape drive
b. magnetic disk - disk drive
c. paper tape - paper tape reader
d. punch card - sorter

53. Which of the following is not an example of I/O media? _________

a. punch cards
b. paper tape
c. magnetic tape
d. printer

The following pages are pictures of the I/O devices. Identify each device in the space provided. Select pictures from Introduction to Data Processing by Wanous and Wanous or any local IBM firm that are examples of input and output media (card read and punch, magnetic tape, magnetic disk, printer, central processing unit (consele), data terminal); unit-record (key-punch machine sorter, sorter-collator); reproducer; interpreter. Select six pictures.

54. ______________________________

55. ______________________________

56. ______________________________

57. ______________________________

58. ______________________________

59. ______________________________

60. Place an (x) in the space provided which are examples of programming languages.

_________ FRENCH
_________ FORTRAN
_________ ENGLISH
_________ RPG
_________ COBOL

61. The compiler translates procedure language to _________ language.

a. FORTRAN
b. FRENCH
c. COBOL
d. MACHINE

62. A scientific problem would normally be solved using the ________ language.

a. FORTRAN
b. RPG
c. COBOL
d. MACHINE

63. A programmer would normally use the _________ language for an accountants program.

a. FORTRAN
b. COBOL
c. BASIC
d. ASSEMBLER

64. Once the program has been compiled it is ready for a final run? (true or false) ____________

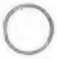
65. Part of planning the program is analyzing the problem? (true or false) ____________

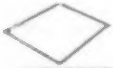
66. A flowchart is a step by step picture to solve a problem? (true or false) ____________

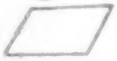
67 A record is one or more fields? (true or false) ____________

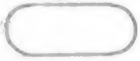
68. Position numbers on a printer spacing chart represent print positions on a printer? (true or false) ____________

69. Identify the following flow chart symbols.

____________ 

____________ 

____________ 

____________ 

70. The computer operator communicates with the supervisor program by using job control statements? (true or false) ____________

72. Operating systems were developed to increase the efficiency of both the computer, and the programmer. (true or false) ____________

73. Which of the following is the correct way to prepare a computer program? ____________

A. 1. Define the problem
   2. Plan the program
   3. Write the program
   4. Test the program
   5. Include the program for documentation

B. 1. Plan the program
   2. Define the program
   3. Write the program
   4. Test the program
   5. Include the program for documentation

74. Which of the following mechanisms currently offer protection from misuse of computers?

a. occupational licensing
b. ombudsman
c. Fair Credit Reporting Act
d. Control by legislation
e. Computer regulation by a governmental commission

75. You currently have the right to investigate any data bank record about you which is maintained by private business? (true or false) _________

76. It is illegal for a school to give personal information about you to private associations or individuals. (true or false) _________________

77. Organizations which maintain personal information about you must, upon your request, or do not have to tell you who has had access to your file. ______________________

78. Any organization maintaining a data file containing erroneous information is responsible for making corrections in the file, and for giving the corrected information to recipients of the erroneous data. (true or false)

____

OFFICE PRACTICE/PROCEDURES

THE CURRENT STATUS

Secondary Schools

1. Description of current program

The open system applies at most of the high schools, however, there are schools that restrict enrollment to juniors and seniors only.

Office Practice is offered as:
(including Business Machines)

a) a one-year course (including 1/3 to 1/2 of the year devoted to Business Machines).

b) a semester course (including the use of the 10-key adding machine).

c) a semester course in Business Machines and a semester course in Office Practice.

d) a one-year course in Office Practice and a one-year course in Business Machines.

e) a semester course in Office Simulation as a culminating course for seniors.

2. List and description of current courses and sequence

No sequence

Office Practice (0915)

Office Practice provides the student with a working knowledge of office procedures, services, equipment, and supplies. A study of indexing and filing rules and their application to filing cards and correspondences is also covered. Special emphasis is placed in developing knowledge and skill in performing clerical duties and routines required of and performed by the office worker.

Business Machines (0914)

Business Machines develops basic skills in operating the most used office machines including calculators, adding machines, duplicators, and transcribers. Skills and techniques are applied in completing business problems.

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COMMUNITY COLLEGES

1. There are presently five campuses that offer office procedure courses which are required for a Clerical or Secretarial Certificate and/or Associate in Science degree. Since this is a course instead of a program, there is no course sequence but the ability to type at a minimum of 35 gwam for five minutes with not more than 5 errors is a necessary prerequisite*. (This is the minimum requirement for completion of Typing-Level 1.) Each campus has its own numbering system, course titles, credits, and graduation requirements.

2. Table I lists the current course equivalencies for office procedure courses of the five campuses. See Appendix I for course descriptions.

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*EXCEPTIONS

Church College of Hawaii: Sequential courses - Off. Mgt. 370, Off. Mgt. 875

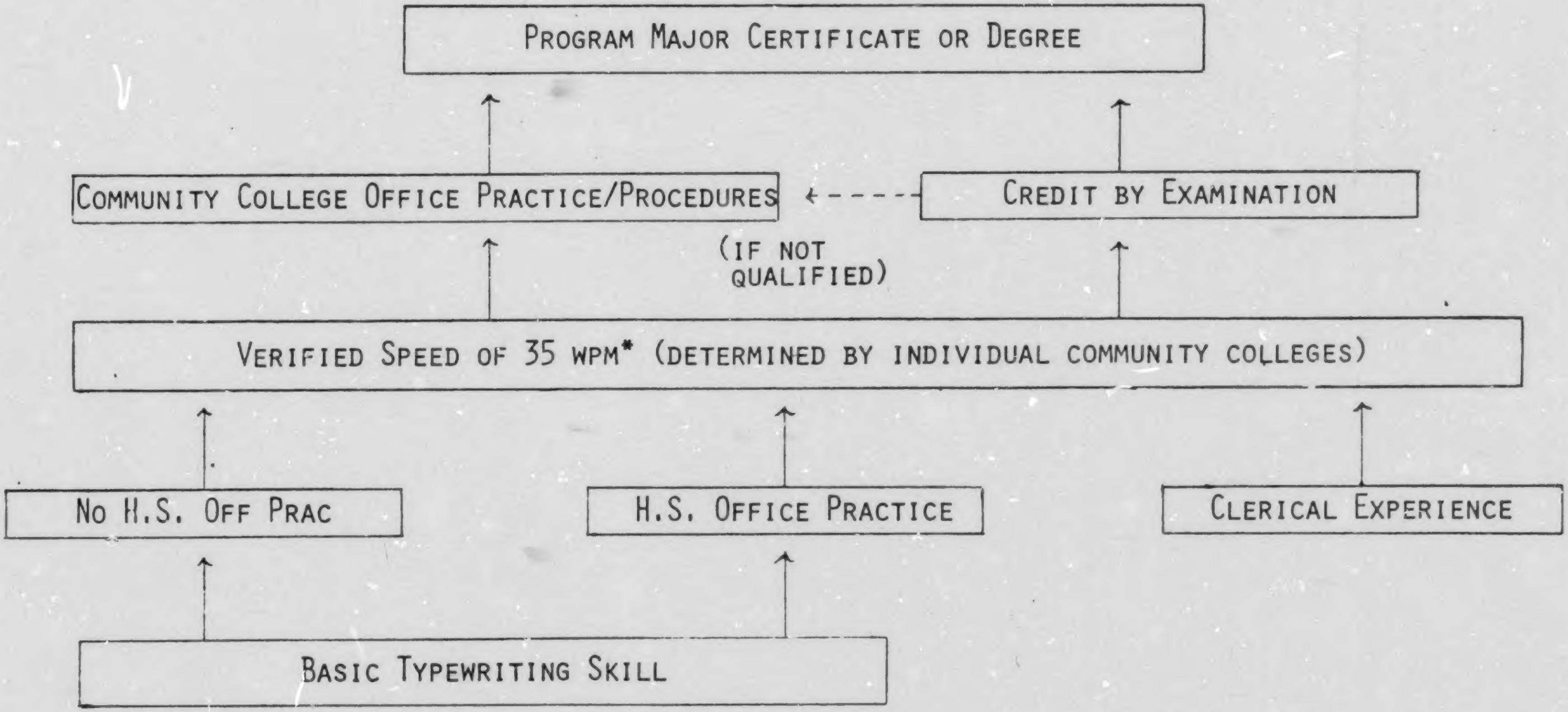
Maui Community College: Typewriting minimum prerequisite - 40 gwam

TABLE 1 - COURSE EQUIVALENCY

GENERAL CATEGORIES	CHURCH COLLEGE		HAWAII	KAPIOLANI		KAUAI	LEEWARD	MAUI	WINDWARD
Part A - Office Procedures* Basic Course Contents:	Office Mgmt 370 3 credits	Office Mgmt 375 3 credits	Practicum in Off Procedures OFPRO 022 4 credits	Clerical Off Pro OFPRO 40 4 credits	Secretarial Pro OFPRO 50 4 credits	Applied Off Practice Bus 50 3 credits	Office Pro Bus 50 3 credits	Office Practice Bus 41 3 credits	Office Pro Bus 50 3 credits
Executive Typewriter	X	X		X	X	X	X	X	X
Office Communication	X	X	X	X	X	X	X	X	X
Recordkeeping	X	X	X	X	X			X	X
Telephoning	X	X	X	X	X	X	X	X	X
Duplicating	X	X	X	X	X	X	X	X	X
Grooming	X	X	X	X	X	X	X	X	X
Human Relations	X	X		X	X		X		X
Filing	X	X	X	X			X	X	X
Transcribing Machines	X	X				X	X	X	
Part B - Specialized Areas:* One Semester									
Business Machines		X	X		X	X	X	X	X
Filing					X	X		X	
Transcribing Machines			X		X			X	
Human Relations			X		X		X	X	
Duplicating					X				
Record Management					X				
Applied Office Service					X				

* See Appendix I for course descriptions

CURRENT STUDENT FLOW CHART


PROGRAM MAJOR CERTIFICATE OR DEGREE
COMMUNITY COLLEGE OFFICE PRACTICE/PROCEDURES
CREDIT BY EXAMINATION
(IF NOT QUALIFIED)
VERIFIED SPEED OF 35 WPM* (DETERMINED BY INDIVIDUAL COMMUNITY COLLEGES)
NO H.S. OFF PRAC
H.S. OFFICE PRACTICE
CLERICAL EXPERIENCE
BASIC TYPEWRITING SKILL

* 40 WPM IS REQUIRED AT MAUI C.C.

PROBLEMS, RECOMMENDATIONS, AND IMPLEMENTATIONS

1. Problem

Difference in time allowed for the high School Office Practice course affects the extent to which the course objectives are met.

Recommendation

It is recommended that the Office Practice course be offered for one semester and Business Machines be offered for another semester OR Office Practice be offered as a one-year course devoting 1/3 to 1/2 of the year to Business Machines. (See Recommended Course Content, Appendix A, page 58).

Implementation

Members of the team will contact each school offering Office Practice to get some feedback on the recommended course content proposed by this group.

Reactions will be compiled and disseminated to all schools.

2. Problem

Some of the high school Office Practice classes do not have the minimum number of machines that would be recommended for a comprehensive Office Practice course. This will affect the degree of proficiency attained on the Business Machines.

Recommendation

Based on the recommended course content, the Office Practice teachers should evaluate their equipment inventory to determine the minimum number of machines needed according to the class size.

Implementation

Each teacher will be encouraged to make a list of the equipment available and use the formula to determine the minimum number of machines needed as recommended by the state course guideline. (See Appendix B, page 60).

3. Problem

Need for more teacher input in determining course guide.

Recommendation

Teachers should be given an opportunity to react to proposed course description before final publication.

Implementation

Every department chairman will be informed that a copy of the Approved Course Code Numbers, which provides course descriptions and course objectives, is available to every school. The Office Practice teacher will be informed that they may react to the course description for Office Practice and submit their reaction to the Business Education Program Specialist, Deaprtment of Education, by the end of the first semester.

4. Problem

After assessing the minimum classroom needs, the Office Practice teacher has difficulty obtaining funds to bring the classroom inventory up to the recommended level.

Recommendation

Teachers should be informed of the planning and the steps involved in attempting to find a method of attaining the minimum equipment.

Implementation

Through this articulation document, teachers will be informed of the following prodedures:

1) Present a copy of your classroom assessment in relation to the recommended state minimum to your department chairman to inform him of your needs and to see if department funds can be used to purchase the needed equipment. Note: Teachers should be reminded that budgeting is done biennially, therefore, funds will not be available immediately.

2) If department funds are not available, it should be the responsibility of the department chairman to inform the school administrators and be ready to take advantage of any general school funds that may become available for the total school.

3) Look into the availability of funds through the department chairman, principal, and District Office, for special project funding under the Vocational Technical Educational section of the Department of Education. Proposals may need to be written to justify the expenditure of funds.

5. Problem

Occasional use of identical instructional materials at both the high school and community college levels.

Recommendation

Make high school Approved Instructional Materials (AIM) List available to the Community College Business Education Divisions.

Implementation

Business Education Office of the Department of Education will send a copy of the AIM to every Community College Business Division. Each community college instructor will check the AIM to avoid the use of high school instructional materials at the community college level.

6. Problem

There is duplication of course segments taken by the student at the secondary and community college levels.

Recommendation

Inform incoming students that office procedures credit-by-examination options are available at the community colleges.

Implementation

Each office procedures instructor will be directed, on the first day of class, to inform students of the option of obtaining credit-by-examination, provide them with information about areas to be tested, and strongly encourage those individuals who are qualified to take the test. The division chairman will provide students with a handout explaining procedures required in order to obtain credit-by-examination. Those successfully completing credit-by-examination for an entire course will receive course credit and be excused from retaking the course; those successfully completing credit-by-examination for a unit (or units) within a course will be given partial credit and exemption from taking that particular unit within the course.

7. Problem

There is limited articulation among community colleges and among high schools or between community colleges and high schools. Course titles, credits, and numbering systems are not the same at all community colleges. (See Table I)

Recommendation

An articulation committee be established and funded by the Office of the State Director for Vocational-Technical Education. The articulation committee members should consist of one office procedure teacher from each community college, office procedure teachers from any interested private institute, and one office procedure teacher from each high school district. Funds should cover travel and per diem for outer island participants. The purpose is to update and revise this articulation agreement.

Implementation

State Director of Vocational Education should be requested to organize this committee and budget funds for its operation.

8. Problem

Although credit by examination is available at all community colleges, a great majority of entering students who have had high school office procedures choose not to take the examination.

Recommendation

Qualified students should be encouraged by instructors and counselors to take credit-by-examination.

Implementation

Each office procedures instructor will be directed, on the first day of class, to inform students of the option of obtaining credit-by-examination, provide them with information about areas to be tested, and strongly encourage those individuals who are qualified to take the test. The division chairman will provide students with a handout explaining procedures required in order to obtain credit- by-examination. Those successfully completing credit-by-examination for an entire course will receive course credit and be excused from retaking the course; those successfully completing credit-by-examination for a unit (or units) within a course will be given partial credit and exemption from taking that particular unit within the course.

9. Problem

Students at the secondary and community college levels are not being properly counseled/advised on the choice of vocational careers commensurate with their abilities and interests.

Recommendation

Secondary schools and community colleges should provide vocational counselors.

Implementation

The State Director of Vocational Education should seek ways to provide specially trained vocational career counselors at each high school and community college. This committee recommends one counselor for every 350 students.

10. Problem

Office procedures course content varies among the community colleges because of the following factors:

a. student population
b. community needs
c. campus facilities, staffing and equipment limitations
d. specialized areas are separate courses at some campuses (See Table I)

Recommendation

Office procedures course outlines at the community college level and the high school level be made available to each other upon request for more effective counseling of students.

Implementation

Department chairman or department heads will be responsible for requesting course outlines and disseminating them as needed.

Recommendation

Where development of office procedures courses is inhibited because of staffing and equipment limitations, every effort should be made to secure additional funding sources.

Implementation

Procure Title III and/or other vocational educational funds for purchasing equipment and increasing staff.

Recommendations for Horizontal Articulation

Secondary Schools

1. Acceptance of a State course guideline to work toward a minimum course content on the high school level.

2. High Schools should provide vocational career counselors.

Community Colleges

1. An articulation committee of office practice/procedure community college instructors should be established and funded by the State Director of Vocational and Technical Education to review and implement proposed recommendations.

2. The community colleges provide more flexibility and student options, e.g., module scheduling for office procedure courses.

3. Community colleges should provide vocational career counselors.

APPENDICES

Appendix A

RECOMMENDED COURSE CONTENT FOR OFFICE PRACTICE ON THE HIGH SCHOOL LEVEL

Note: This is just a recommended course content to be used as a statewide guideline to work toward some minimum uniformity for all students who take the course.

Prerequisite: Basic typewriting skills as agreed in the minimum criteria listed for Typewriting Level I.

I. Role of the Office Worker

   A. Personal Qualities
   B. Human Relations
   C. Grooming
   D. Business Etiquette

*II. Application of typewriting skills which may include jobs using various business forms such as:

   A. Memos
   B. Telegrams
   C. Itinerary
   D. Purchase orders
   E. Invoices
   F. Payroll forms
   G. Business letters
   H. Reports and manuscripts

*If typewriting production is covered in advanced typewriting or any course prior to Office Practice, another unit such as Civil Service Training may be substituted.

III. Business Machines

   A. Calculating Machines (basic operations in using the machines for addition, subtraction, multiplication and division)

      1. Ten-Key Adding (3-4 weeks)
      2. Ten-Key Printing Calculator (3-4 weeks)
      3. Electronic Calculator (3-4 weeks)

   B. Transcribing Machines (2-3 weeks) - 3 machines

   C. Differential Spacing Typewriter (2-3 weeks) - 3 machines

   D. Duplicating (2-3 weeks) - 1 machine each

      1. Spirit duplicating
      2. Stencil duplicating
      3. Copying machine

IV. Filing

- A. Filing Procedures and Equipment

- B. Filing Systems

    1. Alphabetic
    2. Subject

V. Job Preparation

- A. Job Opportunities
- B. Job Interview
- C. Letter of Application and Resume

VI. Telephone Usage

VII. Mail Handling

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Appendix B

FORMULA FOR DETERMINING MINIMUM NUMBER OF MACHINES NEEDED FOR OFFICE PRACTICE

Class size - 25

Course time - 1 semester (18 weeks)

1. Ten-Key Adding 4 1/6 or ⑤
   3 weeks per student
   6 students per machine   4 1/6
   $3\overline{)18}$ weeks per semester $6\overline{)25}$

2. Ten-Key Printing Calculator 4 1/6 or ⑤
   3 weeks per student
   6 students per machine   4 1/6
   $3\overline{)18}$ $6\overline{)25}$

3. Electronic Calculator 5 1/2 or ⑥
   4 weeks per student
   4 1/2 students per machine   5.6
   $4\overline{)18}$ $4.5\overline{)25.0}$
   $\underline{22\ 5}$
   2 5

4. Transcribing Machine ③
   2 weeks per student
   9 per machine   2 7/9
   $2\overline{)18}$ $9\overline{)25}$
   $\underline{18}$
   7

5. Differential Spacing Typewriter ③
   2 weeks per student
   9 per machine   2 7/9
   $2\overline{)18}$ $9\overline{)25}$
   $\underline{18}$
   7

6. Duplicating 1 each
   Spirit
   Stencil
   Copying

APPENDIX C

COURSE DESCRIPTIONS FOR COMMUNITY COLLEGES - OFFICE PROCEDURES/PRACTICE

(Basic Course Contents - Table 1)
Part A

Church College of Hawaii

OM 375 Secretarial Procedures (3)

Review of office responsibilities accompanied by laboratory experiences: duplicating, transcribing, human relations and record management.

OM 370 Records Control & Office Machines (3)

Fundamentals of filing, machine transcription, duplicating machines, and other office equipment supplies and procedures.

Hawaii Community College

OFPRO 22 Practicum in Office Procedures (4 cl. hrs.) (4 cr.)

This course develops entry level competencies in the following clerical occupational areas: Office communications, alphabetic filing, telephoning, duplicating, and recordkeeping.

Kapiolani Community College

OFPRO 40 General Clerical Procedures (4)
6 hours per week
Prerequisite: Office Procedures 21 or concurrent enrollment

Integration of all skills and knowledge necessary to solve the problems which may confront the office worker. Emphasis placed on communication and interdepartmental functions, and guidance offered in personality development and vocational planning.

OFPRO 50 Secretarial Procedures (4)
6 hours per week
Prerequisite: Office Procedures II or Work Processing II or concurrent enrollment

Developing understanding of office procedure, planning the flow of work in offices, understanding the interrelationship of departments and the teamwork necessary in the production of office work. Production level techniques and responsibilities common to secretarial work are explored, as well as supervisory and management problems.

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Kauai Community College

BUS 050 Applied Office Practice (3)
Class hours: 6 lecture-laboratory
Prerequisite: TYPW 020 with grade of "C" or higher.

Work in College office of College steno pool. Opportunity for application of secretarial science and clerical skills learned in the classroom and for practical experience in clerical and office procedures in on-campus offices.

Leeward Community College

BUS 50 Office Procedures (3 units)

The student will continue to refine and further develop technical skills and learn to identify job performance requirements and trait of effective clerical and secretarial workers. The student will then apply these skills and knowledge to selected laboratory materials and experiences. The credits are not transferable. The secretarial degree candidate will enroll in this course as preparation for Business 51. Recommended preparation: Completion of at least one semester of typewriting at LCC with a minimum speed of 45 WPM. (Requirement for Stenography or Clerk-Typist Certificate of Achievement, A.S. Degree in Secretarial Science and Certificate of Achievement and A.S. Degree in Library Technology.)

Maui Community College

BUS 41 Office Practice (3) (3 hrs. lect.)
Prerequisite: Typw 24 for Certificate Program; Typw 43 for Degree Program.

Filing, preparing masters and stencils, duplicating methods, transcribing machines and typewriting on electric machines. Typical office procedures and responsibilities. Recommended to be taken during student's last semester of certificate or degree program.

Windward Community College

BUS 050 Office Procedures (3 units)

The knowledge of office duties which has not been covered in other classes in business, such as filing, mail handling, telephone techniques, interpersonal relations, good grooming, and duplicating machines. Students will perform satisfactorily as telephone receptionist in the Administrative office for one hour of lab work as part of the class requirements.

APPENDIX D

COURSE DESCRIPTIONS
(Specialized Areas - Table 1)
Part A

The Church College of Hawaii

OM 133 Business Machines (3)

An introductory course designed to give the students a working ability with five different adding and calculating machines.

Hawaii Community College

BMACH 20 Computational Skills (4 cl. hrs.) (4 cr.)

This course is designed to provide competence and understanding of the 10-key adding machine and printing calculator. Emphasis is on accuracy and computations, problem-solving techniques and practical business applications of mathematical skills.

GBUS 24 Machine Transcription (3 cl. hrs.) (3 cr.)

This course develops communication skills needed for entry level jobs calling for transcribing from electronic machines. Modern business procedures and terminology are emphasized.

GBUS 21 Human Relations in the World of Work (3 cl. hrs.) (3 cr.)

An action and goal-oriented course designed to develop positive self-image and cooperative teamwork. Motivation, feelings, and emotions are discussed with particular reference to on-the-job problems. Major leadership styles and job effectiveness are investigated.

Kapiolani Community College

BMACH 20B Ten-Key Adders (1)

Programmed, individualized instruction in attaining speed and accuracy in the operation of the ten-key adder. Practical applications of business problems are used. Students work independently in the laboratory plus weekly conferences with the instructor.

BMACH 20C Rotary, Printing Calculators (1)

Programmed, individualized instruction in attaining proficiency in the use of rotary and printing calculators. Complex problems of business and industry requiring proration, distribution work and special analyses are mastered. Students work independently in the laboratory plus weekly conferences with the instructor.

BMACH 20D Electronic Calculators (1)

Programmed, individualized instruction in the use of the electronic desk calculator. Problem-solving for business and industry are undertaken. Memory units, storage registers, and automatic decimal controls are introduced. Students work independently in the laboratory plus weekly conferences with the instructor.

BMACH 20 Business Machines (3)

Contents of Business Machines 20B, 20C and 20D, combined into a one semester course.

BMACH 21 Advanced Business Machines (2)
3 hours per week
Prerequisite: Business Machines 20 B, C, D or equivalent

An intensive course to develop a high degree of proficiency in the operation of the 10-key adding-listing machine, electronic calculators, rotary, and printing calculators. Emphasis on speed and accuracy as well as the ability to process complex business problems.

GBUS 23 Human Relations in Business (3)
3 hours per week

A functional approach to the problem of interpersonal relations, stressing the development of proper business attitudes, habits, and etiquette.

OFPRO 20B Filing (1)

Weekly group sessions and lab hours in Learning Center. A Study of indexing and filing procedures covering the theory and practices of alphabetical, numerical, geographical, and subject systems.

OFPRO 20C Records Management (1)
15 hours total
Prerequisite: OFPRO 20B

Establishing filing systems, transferring and disposing of records, and evaluating filing efficiency.

OFPRO 24 Duplicating I (1)

Weekly group sessions and open lab hours in Learning Center. Spirit and stencil duplicating; typing spirit masters and stencils; operating the duplicators.

OFPRO 25 Duplicating II (1)
Prerequisite: OFPRO 24

Advance work in spirit, stencil, and offset duplicating. Lettering, designing forms, and drawing on stencils and masters.

OFPRO 36 Applied Office Services (2)
5 hours per week
Prerequisite: Consent of instructor

Practical experience in routine clerical and office procedures in various offices on campus with a seminar once a week. Credit can be applied only once.

TYPW 35B Machine Transcription I (1)
Weekly group sessions and open lab hours in Learning Center
Prerequisite: Typewriting 24 or equivalent

Office Applications: Operating the transcribing unit, developing transcribing skills, transcribing various types of business letters with envelopes and carbon copies.

TYPW 35C Machine Transcription II (1)
Weekly group sessions and open lab hours in Learning Center
Prerequisite: Typewriting 35B or equivalent

Office Applications: Proofreading, editing business communications, action and courteous letters, manuscript typing, typing from rough draft, and tabular typing.

TYPW 35D Machine Transcription III (1)
Weekly group sessions and open lab hours in Learning Center
Prerequisite: Typewriting 35C or equivalent

Office Applications: Urgent messages, repetitive correspondence, inter-company messages, handling incoming mail, handling outgoing mail, and writing application letters.

TYPW 35 Machine Transcription (3)
Prerequisite: Typewriting 24 or equivalent

Contents of Typewriting 35B, 35C and 35D combined into a one semester course.

Kauai Community College

BUS 011 Administrative Communications (3)
Prerequisite: TYPW 020 and acceptable score on English placement test, or completion of ENG 010 with a grade of "C" or higher.

Fundamentals of communications for business and industry. Instruction and practice in writing correspondence for business and industry: Letters of inquiry, orders and acknowledgments, sales letters, claims and adjustments, collection letters, and report writing. Intensive practice in storing business correspondence with emphasis on applying indexing rules and actual filing correspondence.

BUS 021 Calculating Machines (2)
Class hours: 1 lecture, 2 lecture-lab[illegible]ry

Laboratory course covering fundamental skills in the operations of the rotary, printing, and electronic calculators, the ten-key adding-listing machines, and the cash register.

Leeward Community College

BUS 22 Office Machines (3 units)

The student will develop skill and accuracy in mathematics. Includes the study of decimals, fractions, aliquot parts, percentages, discounts, inventory, payroll, interest. (Requirement for A.S. Degree in Accounting and Secretarial Science.)

MGT 22 Human Relations in Management (3 units)

The student will understand how to deal more effectively with supervisory problems in areas such as motivation, discipline, communications, resistance to change and informal group dynamics. Recommended preparation: Management 21. (Requirement for A.S. Degree in Management.)

COURSE DESCRIPTIONS
OFFICE PROCEDURES/PRACTICE

(Specialized Areas - Table 1)
Part B

Maui Community College

BUS 24 Business Machines - Electronic Calculator (1)

An intensive course to develop a high degree of proficiency in the operation and application of the electronic calculator. Emphasis is placed on speed and accuracy in solving practical problems in business. (20 hrs. lect./lab)

BUS 25 Business Machine - Rotary Calculator (1)

An intensive course to develop a high degree of proficiency in the operation and application of the rotary calculator. Emphasis is placed on speed and accuracy in solving practical problems in business. (20 hrs. lect./lab)

BUS 26 Business Machine - Ten-Key Adding Listing Machine (1)

An intensive course to develop a high degree of proficiency in the operation and application of the ten-key adding listing machine. Emphasis is placed on speed and accuracy in solving practical problems in business. (20 hrs. lect./lab)

BUS 27 Business Machine - Full-Key Adding Listing Machine (1)

An intensive course to develop a high degree of proficiency in the operation and application of the full-key adding listing machines.. Emphasis is placed on speed and accuracy in solving practical problems in business. (20 hrs. lect./lab)

PSYCH 51 Human Relations (2)

Fundamentals of human behavior and psychological principles affecting personal relationships and adjustments. (2 hrs. lect./disc.)

SEC SCI 20 Business Writing (3)

Application of the basic skills of English to the needs of the business student. Includes: word usage, spelling, capitalization, punctuation, syllabication, sentence structure. Business letter writing: letters of inquiry, orders, sales, credit, collection, claims and employment. Use of dictating/transcribing machine. (3 hrs. lect.)

SEC SCI 25 Filing and Records Control (2)

Principles and procedures of filing including the managerial aspects of records maintenance. Course includes: principles of filing, filing system and records management. (2 hrs. lect.)

Windward Community College

BUS 022 Office Machines (3 units)

Fundamental operation and application of the ten-key adding-listing machine, printing calculator, rotary calculator, and the electronic calculator, as these are used in typical business situations.

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COLLABORATIVE ROLES AND FUNCTIONS
OF
OCCUPATIONAL EDUCATION PROGRAMS

REPORT

Submitted by Electricity Team

June 1974

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FOREWORD

This document, An Articulation Proposal between the Community Colleges and the Department of Education for a Statewide Electricity Program, is an attempt to develop a framework for a comprehensive Electricity Program so that students can progress from lower levels to higher levels with minimum amount of duplication and repetition, and for maximum options for continuing education. It is the result of cooperative efforts of many dedicated people in the State of Hawaii in its planning, researching and development. Experienced electricity instructors in cooperation with Community College, University System and Department of Education personnel have drawn upon ideas and practices in both local and national scenes. However, the acceptance and success of this proposal is dependent upon the involvement of all people and agencies interested in the improvement of vocational and technical education in the State of Hawaii.

IN MEMORIUM

We are deeply saddened by the passing on March 28, 1974, of Harry Chikamori, Apprentice Training Coordinator for the International Brotherhood of Electrical Workers, Local 1186. In recent years Harry's life had been devoted to education. The graduates from his program have been among the best trained of Hawaii's skilled craftsmen. His contributions to this articulation study typify his concern for the education of young people, particularly those who had chosen careers in electricity. We are fortunate to have had his support and cooperation to assist us in the initial stages of our work; we are grieved that he is not able to witness its completion.

We have lost a dear friend. Vocational education has lost a dedicated leader.

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INTRODUCTION

Electric power is used in homes, industry and commercial establishments to perform a variety of work. The production and consumption of electric energy has helped to increase the standard of living of the nation since the latter part of the nineteenth century. This dependence on electricity has resulted in the emergence of many related occupations. With rapid advances in technology, the need for skilled workers to handle the more sophisticated developments has increased. Skilled workers are needed in the electrical occupations to design, install, maintain, construct and repair electrical systems and/or equipment of all kinds. Electrical workers must receive training to be able to qualify for the variety of jobs available in the electrical occupations.

The history of specialized vocational training can be traced back to the extension of the Smith-Hughes Act of 1917 to Hawaii in 1924. Vocational programs of that period were closely related to the sugar and pineapple industries and courses offered included automotive, welding, carpentry, drafting and machine shop. An Electricity Program was later developed at the Honolulu Vocational School (presently Honolulu Community College) which offered the first program leading to a certificate in electricity. Subsequently, the Hawaii Vocational School (presently the Hawaii Community College) added an Electricity Program to their vocational training curriculum. Currently, Honolulu Community College and Hawaii Community College are the only state institutions that offer electrical programs that lead to a certificate in electricity. However, expansion of the certificated electrical program in the other community colleges is projected to meet the needs of a continuously developing occupation and the increased dependence on electricity by industry and the public.

In addition, state regulations that require licensing of electricians and the attrition of electricians who are presently working under licenses obtained through the "grandfather clause" is also expected to affect the need for more trained electrical workers.

Until recently secondary and post secondary educational systems have operated independently of each other with a minimal amount of problems, but with the recent increase in the population of the state and the subsequent increase in the number of schools and colleges, it has become difficult for these educational systems to remain separate. For example problems have developed concerning duplication of curriculum which has too often resulted in wasted time and effort on the part of teachers and students. There have been problems among community colleges themselves involving transfer of credits between institutions, or with course titles and descriptions. A working agreement between the community colleges and the electrical trade concerning the acceptance of community college by the electrical trades is still under discussion and was not pursued in this proposal.

These examples point out the need for articulation efforts between the community colleges and secondary schools as well as with the electrical trades and industry at large. The result would be a more economical and efficient use of state expenditures in the effort to provide education and training that will allow the individual to more fully develop his interests, needs and potentials, and to become a useful and productive member of society.

One of the goals as stated in the Master Plan for Vocational Education for the State of Hawaii is to ... "ensure that Vocational Education Curricula will be designed so that work at lower levels adequately prepare the individual for higher levels, eliminating unnecessary repetition and providing maximum options for continuing education and transfer to other campuses."

This plan is presented as a step in reaching this goal of the Master Plan.

ARTICULATION GOAL AND OBJECTIVES

GOAL

The goal of this articulation proposal for the Electricity Program within the State of Hawaii is to enable the student to progress both vertically and horizontally without due loss of time, money and effort, and to meet the student's needs and interests for productive citizenship.

OBJECTIVES

The objectives of this articulation proposal for the Electricity Program between secondary schools and the community colleges are to:

1. Avoid duplication of course content.
2. Develop closer working relationship between the student and instructor.
3. Increase the number and variety of electricity courses.
4. Standardize course content, credit, level and numbers.
5. Develop a closer interpersonal relationship between the student and institution.
6. Provide a free flow of information, materials, and exchange of ideas.
7. Utilize resources of the community, industry, business, education and government.
8. Plan, organize, synthesize and implement in-service workshops.
9. Develop guidelines for evaluation of the proposed articulation plans.
10. Coordinate and implement the proposed articulation plans.

THE PROBLEMS

Articulation problems between the secondary schools and the community colleges for the Electricity Program have been expressed by students and personnel connected with the Electricity Program. However, for many years no organized attempts have been made to resolve these problems. It was the purpose of the Statewide Articulation Committee to identify some of the more urgent problems so that recommendations could be made to resolve them. The following problems have emerged from an analysis of existing programs and through discussion by representive groups of people.

1. There is general confusion and misunderstanding regarding the philosophy, aims, and objectives of the Electricity Program at both the secondary schools and community colleges. (Conferences, Student interviews).
2. Students are unable to make rational occupational decisions due to a lack of statewide resource centers that serve educational, trade, and government agencies. (Student Panel Reactions).
3. The Hawaii and Honolulu Community College catalogs contain the following inequalities:
    a. Hawaii has 12 credits for the course in Interior Wiring, while Honolulu has 7 credits for the course in Industrial Wiring.
    b. Course titles.
    c. Course numbers.
    d. Course descriptions.
4. Many of the courses are in large block units. For example, Hawaii Community College requires 12 credit hours for one course. (Catalogs, Interview)

5. The degree requirements for Hawaii and Honolulu Community Colleges are vastly different. To obtain the A.S. degree in Electricity from Hawaii Community College, a student needs 74 credits while a student at Honolulu Community College needs only 60 credits. (Catalogs, Interview)
6. There is a difference in the amount of contact hours required for the Electricity Programs between Hawaii Community College and Honolulu Community College. (Conference, Interview)
7. The instructors need to keep abreast of developments and technological advancements in the electrical industry. (Conference, Interview)
8. Very few secondary schools offer electricity courses for students to explore and pursue their interest in electrical careers and/or related fields. (Student Conference, Enrollment Report, Community College Survey)

THE PRESENT STATUS OF THE ELECTRICITY PROGRAM IN THE COMMUNITY COLLEGES AND THE SECONDARY SCHOOLS

COMMUNITY COLLEGES

Currently only Honolulu and Hawaii Community Colleges offer degree programs in electricity. Kauai Community College and Maui Community College offer courses in electricity that are supportive for the building, welding, and automotive programs.

As stated earlier, the course numbers and titles are different at Honolulu and Hawaii Community Colleges. An equivalent comparative chart is as follows:

Community College Electrical Technology Programs Course Equivalencies		
General Categories	Honolulu Community College	Hawaii Community College
Introduction and Basic Skills	Phys. 23	Elec. 22
Electrical Wiring	IE 21, 22, 23, 40	IE 21, 22, 41, 42
National Electrical Code	IE 22, 23, 40, 41, 42	IE 21, 22, 41, 42
A.C. Motors & Generators	IE 40, 41	IE 22, 41
A.C. Circuit Theory	IE 43	IE 41
Reactance & Transformers	IEI 43	EI 41, 42
Measuring Instruments	IE 41	EI 21
Distribution Systems	IE 21, 22, 23, 24	EI 22, 41, 42

See Appendix B & C for course descriptions.

Honolulu Community College

The Electricity Program at Honolulu Community College called Industrial Electricity, is designed to prepare the student for entry level skills in the electrical industry and in electrical maintenance. The curriculum is designed to give the student a broad background of basic skills, in wiring signal, lighting and power systems construction blueprint reading for dwelling and residential house wiring, installation of motor-control systems, transformer hook-ups and troubleshooting electrical systems.

Currently, the student may enter the electrical program by one of the following methods: (1) upon graduation from high school, (2) from the military, (3) transfer from another community college and (4) adult population. The 2-year program consists of 28 credit hours in electricity and includes the following courses:

Courses	Credit
PHYS 23 Fundamentals of Electricity	4
IE 21 Industrial Electricity	3
IE 22 Industrial Wiring Systems	4
IE 23 Industrial Wiring Theory	3
IE 40 Advanced Industrial Wiring Systems	4
IE 41 Electrical Power - DC Machinery	3
IE 42 Alternating Current Laboratory	4
IE 43 Alternating Current Theory	3
TOTAL	28 credits

Course credit is granted as follows: (a) one hour lecture is equal to one credit hour, and (b) three hours of laboratory are equal to one credit hour.

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To obtain the Associate in Science Degree in Industrial Electricity, the student must complete the above 28 credit hours plus an additional 32 credit hours of related courses. The Certificate of Achievement is awarded to students who satisfactorily complete the above 28 credit hours plus an additional 7 credit hours of related courses. The list of course requirements and credits for the Electricity Program is shown on Table 1.

In 1972-73 there was a total of 80 students in the electrical program. Introductory classes are limited to 25 students with approximately 50% of an entering class completing the Associate in Science Degree program. In recent years, very few students have selected the Certificate of Achievement program. The attrition of students has been due largely to financial reasons, full-time employment, or re-evaluation of career goals.

The Industrial Electricity Department is composed of two full-time faculty members with one teaching first year students, and the other second year students. The chairman of the electrical department reports directly to an Assistant Dean of Instruction.

Placement of graduates in electrical occupations has been approximately 30%. Many of the remaining graduates find employment in related areas.

Beginning students have been limited in electrical skills and knowledge, with few students having received prior electrical training in the high schools.

Students may challenge courses and receive credit by successfully passing an examination. The examination is administered only with the consent of the instructor who considers prior training and experience of the student before rendering a decision to give such an exam. (Refer to Chart 1).

Upon successful completion of the prescribed courses, the student may seek employment or continue his education. It is expected that the student will acquire minimal skills, knowledge, and attitudes at each level of instruction that will enable him to seek a job at any level of training.

Table 1

HONOLULU COMMUNITY COLLEGE
INDUSTRIAL ELECTRICITY PROGRAM
COURSE REQUIREMENTS
1973-74

FIRST SEMESTER	COURSES	CREDITS CERTIFICATE OF ACHIEVEMENT	CREDITS ASSOCIATE SCIENCE DEGREE
I E 21	INDUSTRIAL ELECTRICITY	3	3
PHYS 23	FUND OF ELECTRICITY	4	4
MATH 18-19	ELEMENTARY MATH (TECHNICAL)	2	2
ENGLISH			3
RECOMMENDED ELECTIVES			3
		9	15
SECOND SEMESTER			
I E 22	INDUSTRIAL WIRING SYSTEMS	4	4
I E 23	INDUSTRIAL WIRING THEORY	3	3
BLPT 41	CONSTRUCTION DRAWING ELECTRICAL	3	3
MATH 20	TECHNICAL MATH II	2	2
SOC. SCIENCE			3
		12	15
THIRD SEMESTER			
I E 40	ADVANCED IND. WIRING	4	4
I E 41	ELECTRICAL POWER DC MACH.	3	3
LIB. ARTS			6
RECOMMENDED ELECTIVES			2
		7	15
FOURTH SEMESTER			
I E 42	ALTERNATING CURRENT LAB	4	4
I E 43	ALTERNATING CURRENT THEORY	3	3
RECOMMENDED ELECTIVES			8
		7	15
	TOTAL	35	60

RECOMMENDED COURSES
SOCIAL SCIENCES . PSY 54 . ECON 40 . MATH 40 . MATH 42 . ENGLISH 43

NOTE: ENGLISH 8 AND MATH 8 ARE REQUIRED OF ALL STUDENTS WHOSE PLACEMENT TEST SCORES ARE BELOW THE MINIMUM.

ASSOCIATE IN SCIENCE DEGREE REQUIREMENTS:
60 CREDITS PLUS 2.0 CUMULATIVE GRADE POINT AVERAGE

CERTIFICATE OF ACHIEVEMENT REQUIREMENTS
35 CREDITS PLUS 2.0 CUMULATIVE GRADE POINT AVERAGE

The objectives of the Industrial Electricity Program are as follows:

1. The student will be able to wire and connect resistors in series, parallel, and series-parallel circuits using the student experiment kit.
2. The student will be able to measure voltage, current, and resistance using the volt-meter, ammeter, and the ohmmeter.
3. The student will be able to wire and connect simple systems such as a button and buzzer circuit, single and 3-way control lighting circuits.
4. The student will be able to identify electrical materials and equipment used in electrical installation such as insulated conductors, non-metallic sheathed cables, outlet and junction boxes, receptacles, switches and lighting fixtures.
5. Student will be able to use the bender to form 90 degree stub-up, back-to-back, and off-set bends in electrical metallic tubing.
6. Student will be able to install simple raceways using non-metallic sheathed cable, armored or BX cable, and or electrical metallic tubing (EMT).
7. The student will be able to properly terminate cables and metallic raceways in boxes and equipment that meets the basic requirement of the National Electrical Code.
8. In the single-family dwelling electrical installation, the student will be able to:
    a. Work from the construction blueprint and determine the material and equipment needed.
    b. Lay-out and rough-in the electric cabling and locate the outlet boxes in accordance with the electrical blueprint.
    c. Connect or hook-up receptacles, switches, lighting

fixtures, kitchen appliances, service equipment, and circuit breaker panelboard in a neat and workmanlike manner.

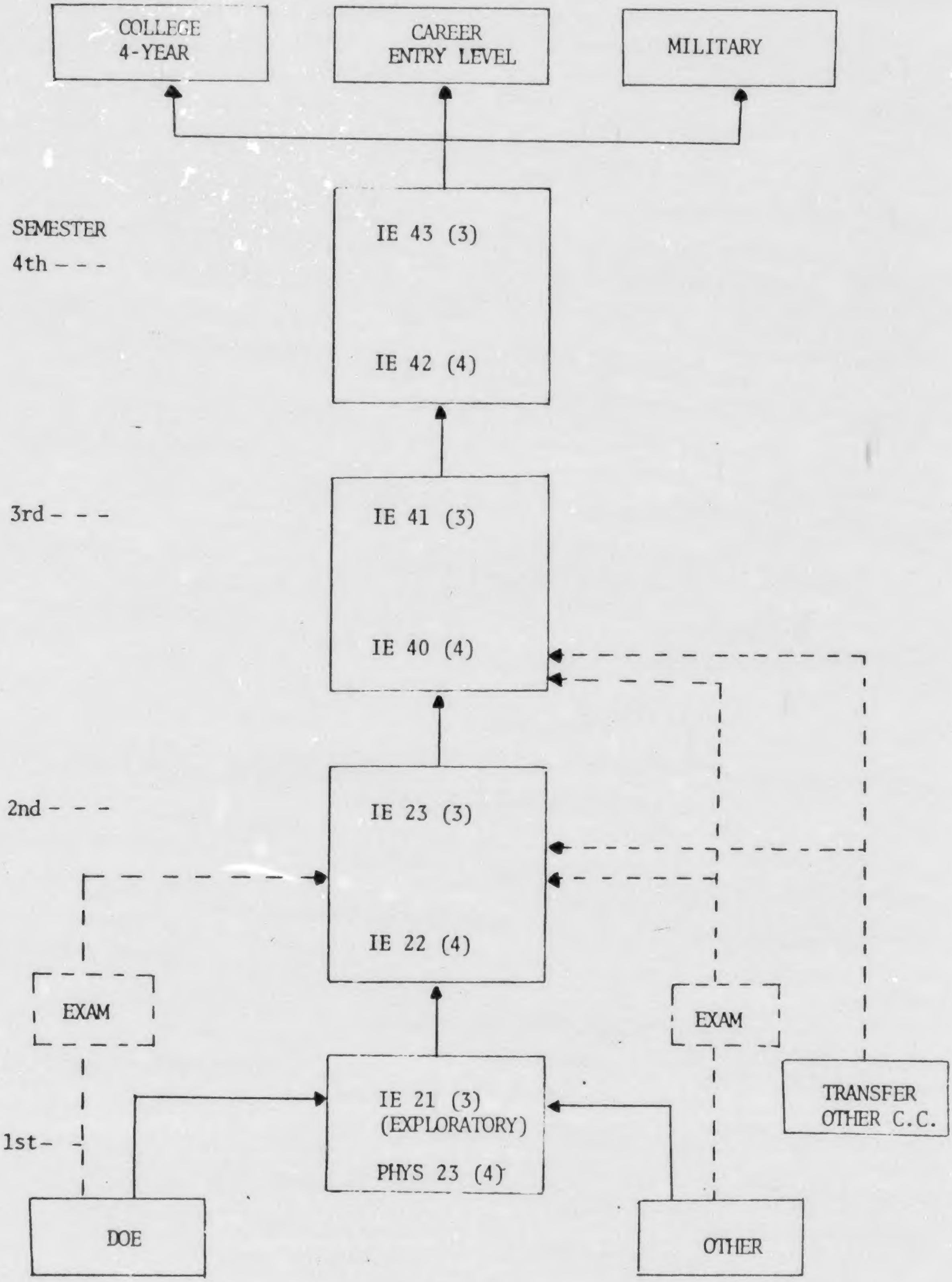
   d. Check-out, trouble-shoot, and test for operation all circuits.

9. In a-c motor-control system, the student will be able to:
   a. Plan, layout, and install a motor-control system which conforms with the National Electrical Code.
   b. Trouble-shoot, check, and test for operation a completed motor-control system.

10. In small transformer work (10kva), the student will be able to:
    a. Identify single-phase terminal lead markings.
    b. Phase for polarity the multiple primary and multiple secondary windings.
    c. Connect single-phase transformers for three-phase delta and wye configurations.

Chart 1

CURRENT STUDENT FLOW CHART FOR HONOLULU COMMUNITY COLLEGE


COLLEGE
4-YEAR
CAREER
ENTRY LEVEL
MILITARY
SEMESTER
4th - - -
IE 43 (3)
IE 42 (4)
3rd - - -
IE 41 (3)
IE 40 (4)
2nd - - -
IE 23 (3)
IE 22 (4)
EXAM
EXAM
TRANSFER
OTHER C.C.
1st-
IE 21 (3)
(EXPLORATORY)
PHYS 23 (4)
DOE
OTHER

Hawaii Community College

To insure commitment to a variety of educational and occupational opportunities, Hawaii Community College offers eleven programs in the Trades and Industry Division. One of these is the Electricity Program.

At present, the Electricity Program at Hawaii Community College is a two year program which offers the student two options. . . .A Certificate of Achievement and an Associate of Science Degree. The Certificate of Achievement is awarded for satisfactory completion of specified vocational technical and related courses. The requirements are as follows:

Elec.	021	Interior Wiring Lecture
Elec.	021L	Interior Wiring Lab
Blpt.	025	Graphics for the Construction Trades
Math	023	Technical Mathematics for Electricity
Elec.	022	Basic Electricity Lecture
Elec.	022L	Basic Electricity Lab
Phys.	023	Technical Physics
Eng. Elc.		
Elec.	041	Alternating Current Lecture
Elec.	041L	Alternating Current Lab
Blpt.	046	Electrical Graphics
Elec.	042	Industrial and Commercial Wiring Lecture
Elec.	042L	Industrial and Commercial Wiring Lab

A total of 65 credits are required for the Certificate of Achievement. Of these 65 credits, 17 are earned in a related area (see Table II,p. 17).

To obtain an Associate of Science Degree, the student must complete all of the required courses for a Certificate of Achievement as listed above and the following additional courses:

9 credits from any of the following areas:

Social Science

Humanities

Natural Science

Therefore, a student must complete 65 credits plus 9 credits for a total of 74 credits for the Associate of Science Degree (see Table II, p. 17).

The purpose of the Electricity Program is to train students for entry level skills in jobs such as a utility groundman, materials expediter, electrical supply salesperson, electricians helper, maintenance electricians helper, motor coil winder apprentice, and electrician apprentice.

There are 32 full-time students enrolled in the Electricity Program in the 1973-1974 school year. Students may enroll only in the fall semester. There was a total of 24 graduates in the Electricity Program in 1972 and 1973. Of these graduates 37.5% were employed directly in the electrical industry. The teaching faculty consists of two full-time instructors.

As shown in Table III on page 17, there were 44 students enrolled in the electricity program in the years 1971-73. Of these, 45.4% received electricity training in high school prior to entering Hawaii Community College. It must be noted that Kohala, Honokaa, and Laupahoehoe High Schools do not offer any electricity courses.

Table II

HAWAII COMMUNITY COLLEGE
PRESENT COURSE REQUIREMENT
FOR ELECTRICITY PROGRAM

COURSES

FIRST SEMESTER	Credits for Certificate of Achievement	Credits for Associate Science Degree
ELEC. 021	5	5
ELEC. 21	7	7
BLPT. 25	3	3
MATH. 23	5	5
	20	20

SECOND SEMESTER	Credits for Certificate of Achievement	Credits for Associate Science Degree
ELEC. 022	5	5
ELEC. 22	7	7
PHY. 23	3	3
ENG. ELC.	3	3
	18	18

THIRD SEMESTER	Credits for Certificate of Achievement	Credits for Associate Science Degree
ELEC. 041	5	5
ELEC. 41	7	7
BLPT. 46	3	3
NA. SCI. ELC.		3
	15	18

FOURTH SEMESTER	Credits for Certificate of Achievement	Credits for Associate Science Degree
ELEC. 042	5	5
ELEC. 42	7	7
SOC. SCI. ELC.		3
SP. ELC.		3
	12	18
TOTAL	65	74

Table III

HAWAII COMMUNITY COLLEGE
ELECTRICITY PROGRAM, FALL 1971-FALL 1973

Electricity/Electronics Background of Entering Students

High School	w/experience	no experience	total
Hilo	16	9	25
Konawaena	3	3	6
Kau	1	1	2
Kohala *	0	4	4
Honokaa *	0	3	3
Laupahoehoe *	0	2	2
Pahoa	0	1	1
Mid Pac	0	1	1
Total	20	24	44

* Do not offer electricity courses

The objectives of the Electricity Program are as follows:

1. The student will be able to use test instruments to measure voltage, current, and resistance.
2. The student will be able to identify and use the basic hand tools of the electrical industry.
3. The student will be able to form electrical connections which are commonly applied in the electrical industry.
4. The student will be able to differentiate between safe and unsafe working conditions when working with and around electrical equipment.
5. The student will be able to recognize standards of workmanship in electrical wiring installations.

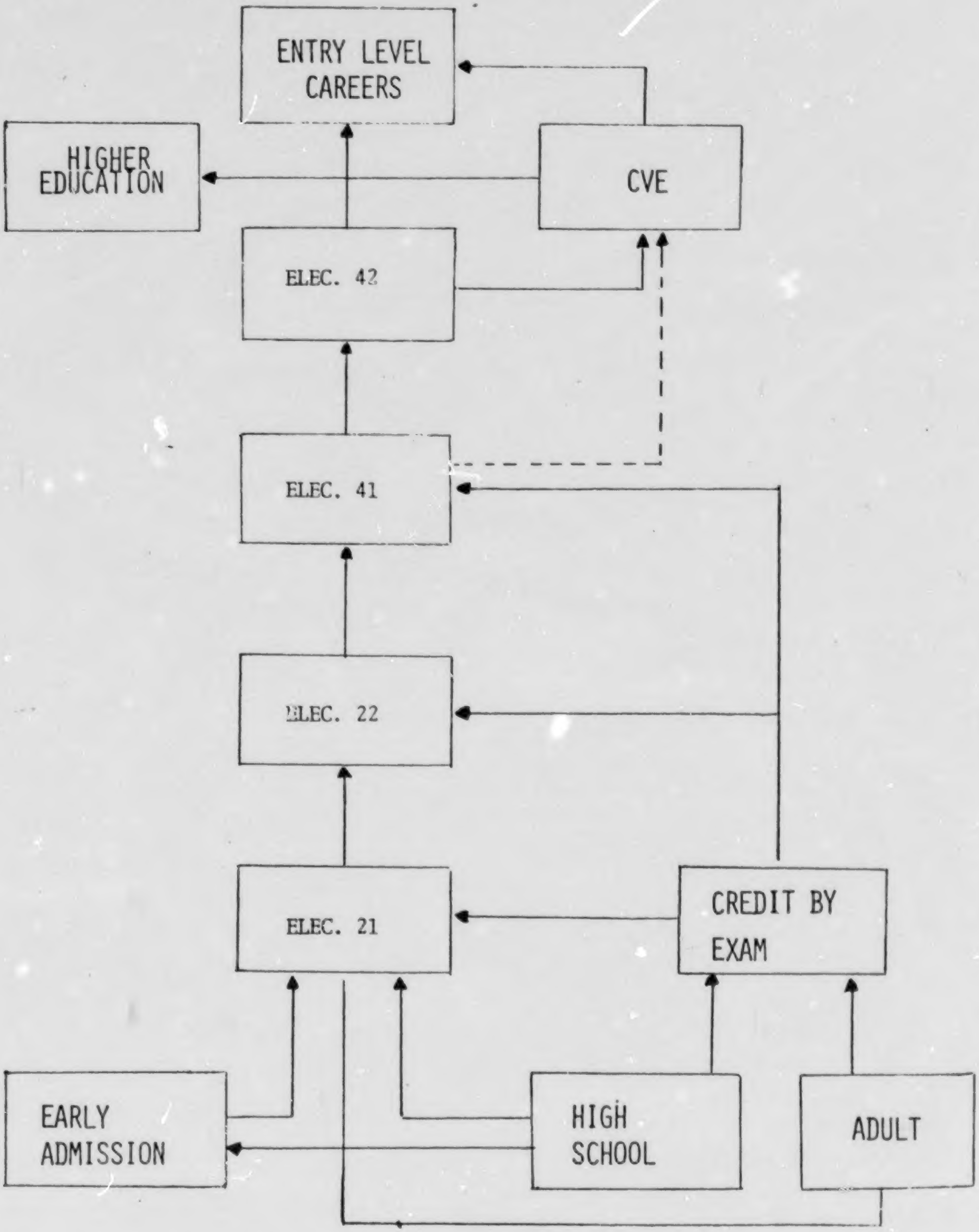
6. The student will be able to install various wiring systems using n.m. cable, metallic raceways, and non-metallic raceways according to code registration.
7. The student will be able to differentiate job descriptions among the various occupations in the electrical industry.
8. The student will be able to wire and connect single pole, three-way and four-way switching devices to control lighting systems.
9. The student will be able to wire and connect basic signal and alarm circuits.
10. The student will be able to troubleshoot and repair lighting circuits.
11. The student will be able to install various types of receptacles.
12. The student will be able to install and connect various types of lighting fixtures.
13. The student will be able to prepare a material take-off for a residential dwelling from a set of electrical floor plans according to specifications and code regulations.
14. The student will be able to terminate and identify conductors in junction boxes and gutters.
15. The student will be able to install and connect wiring in panels and service equipment.
16. The student will be able to troubleshoot and repair portable tools.
17. The student will be able to troubleshoot and repair small appliances.
18. The student will be able to wire and connect single phase and three phase motors and change their rotation when possible.
19. The student will be able to select, install, and wire basic motor control circuits.

20. The student will be able to troubleshoot and repair basic motor control circuits.
21. The student will be able to identify and state the uses of various electrical materials and devices.
22. The student will be able to read the name plates of various types of transformers and interpret the information.
23. The student will be able to wire and connect three phase transformers.
24. The student will be able to connect three single phase transformers to form various three phase systems.
25. The student will be able to connect two single phase transformers to form an open delta system.
26. The student will be able to look at a bank of transformers and state the type of connection being employed.
27. The student will be able to rough-in and trim a dwelling according to plans, specifications and code regulations.
28. The student will be able to state the importance of codes and regulations used in the electrical industry.
29. The student will be able to use and care for various special tools used in the electrical industry such as threading machines, conduit benders, knockout punches, heating and bending equipment and bandsaws.
30. The student will be able to install and wire lighting systems controlled by relays and/or contactors.
31. The student will be able to converse intelligently with people in the electrical industry.

As indicated in the Student Curriculum Flow Chart on the following page, students may enter the Electricity Program directly from high school, military, other community colleges and post secondary education institutions and from the general adult population.

Chart II

HAWAII COMMUNITY COLLEGE
STUDENT CURRICULUM FLOW CHART


ENTRY LEVEL CAREERS
HIGHER EDUCATION
CVE
ELEC. 42
ELEC. 41
ELEC. 22
ELEC. 21
CREDIT BY EXAM
EARLY ADMISSION
HIGH SCHOOL
ADULT

SECONDARY SCHOOLS

The Electricity Program in the Public Schools of Hawaii is an integral part of the Foundation Program for the Public Schools of Hawaii which has the primary purposes of providing: (1) a basis for equal opportunity for all students and (2) a basis for change.

The Electricity curriculum is designed to equip each student with knowledge, skills, attitudes and values the student needs to make responsible decisions that will result in individual self-fulfillment as well as enabling the student to contribute to society.

The Electricity Program is a broad based program and is a part of the Electricity/Electronics course of studies in the public schools of Hawaii. The Authorized Courses and Code Number, 1974-75, the Department of Education lists four courses in the Electricity Program. These are: (1) Basic Electricity I; (2) Basic Electricity II; (3) Electrical Technology I; and (4) Electrical Technology II. The first two courses are listed under Industrial Arts (IA) Program and the latter two under the Industrial Technical Occupational (ITOP) Programs.

The IA program and the ITOP derive their content from industry. However, their purposes differ. The purpose of the IA program is to provide instruction and exploratory experiences concerning technological developments that will enable the student to utilize the knowledge in his personal life. The ITOP is aimed at motivating the student to pursue an occupational goal, as well as to develop basic saleable skills for higher entry level in the occupation.

The course description and code numbers for the four courses as listed in the Authorized Course and Code Number, 1974-75 are on the following pages:

Courses Offered in the Industrial Arts Program

Code Number 1125 BASIC ELECTRICITY I

Objectives:

1. Develop basic skills and knowledge of electricity.
2. Identify and solve simple electrical problems.

Description:

An introduction to the world of electricity. Includes fundamental quantities and their measurement, chemical electricity, magnetism, circuits, inductance and capacitance, transformers, electricity in the home and small motors. Laboratory experiments are included with classroom work. Designing and fabrication of electrical devices are used to supplement classroom work.

Code Number 1126 BASIC ELECTRICITY II

Objectives:

1. Develop knowledge and skills of the measurement, control and applications of direct and alternating current.
2. Analyze and solve basic electrical problems.

Description:

The study of the electrical industries with emphasis on the sources, measurement, control and applications of direct and alternating current, such as those used for heating, power, and illumination, as well as some elementary aspects of the use of electrical energy for communication devices. Learning activities include classroom demonstrations and laboratory experiments, supplemented by the construction of electrical projects from schematic drawings.

Courses Offered in the Industrial Technical Occupations

Code Number 2012 ELECTRICAL TECHNOLOGY I

Objectives:

1. Develop basic entry level skills for the electrical occupational areas.
2. Acquire and apply conceptual knowledge of generation, distribution, and utilization of electrical power.

Description:

Advanced study of Electrical Technology. Classroom and laboratory experiences concerned with the layout, assembly, installation, testing, and maintenance of electrical fixtures, apparatus, and wiring used in electrical systems. Instruction is provided in the reading, interpretation, and understanding of residential, commercial, and industrial wiring based on controlling electrical codes. Simulated class experiences and on-the-job experiences are included.

Code Number 2013 ELECTRICAL TECHNOLOGY II

Objectives:

1. Develop basic entry level skills to a higher level of proficiency to be able to function in various electrical occupational areas.
2. Acquire and apply conceptual knowledge of installing testing, and maintaining electrical systems.

Description:

Advanced study of Electrical Technology. Classroom and

> laboratory experiences concerned with the layout, assembly installation, testing, and maintenance of electrical fixtures, apparatus and wiring used in electrical systems. Instruction is provided in the reading, interpretations, and understanding of residential, commercial, and industrial wiring based on controlling electrical codes. Simulated class experiences and on-the-job experiences are included.

The secondary school enrollment in the electricity courses is relatively small in comparison to the total number of students in grades 9-12. Based on the 1973-74 fall computer printout, there were 736 students enrolled in the electricity courses out of approximately 52,452 students in grades 9-12, or about 1.2%. Only Radford High School in the Central District of Oahu, has an ETRIC Tech I class. The school enrollment in the electricity courses for the school year 1973-74 is shown in Table IV on the following page:

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(As of 10/5/73)

NOTE: Male/Female

Table IV

SECONDARY SCHOOL
ENROLLMENT IN ELECTRICITY COURSES
1973 - 74

DISTRICT	SCHOOL	Basic ETRIC I 1125	Basic ETRIC II 1126	ETRIC TECH I 2012	ETRIC TECH II 2013	ENROLLMENT (TOTAL)
HONOLULU	Farrington High	28/0	--	--	--	28/0 (28)
	Kaimuki High	--	--	--	--	--
	Kaiser High	--	--	--	--	--
	Kalani High	26/0	--	--	--	--
	McKinley High	20/1	--	--	--	20/1 (21)
	Roosevelt High	13/1	--	--	--	13/1 (14)
		87/2	--	--	--	87/2 (89)
CENTRAL	Aiea High	--	--	--	--	--
	Leilehua High	--	--	--	--	--
	Mililani High	--	--	--	--	--
	Moanalua High	--	--	--	--	--
	Radford High	51/1	--	15/1	--	66/2 (68)
	Waialua High	--	--	--	--	--
		51/1	--	15/1	--	66/2 (68)
LEEWARD	Campbell High	76/0	--	--	--	76/0 (76)
	Nanakuli High	--	--	--	--	--
	Pearl City High	33/1	--	--	--	33/1 (34)
	Waianae High	120/0	--	--	--	120/0 (120)
	Waipahu High	--	--	--	--	--
		229/1	--	--	--	229/1 (230)
WINDWARD	Castle High	--	--	--	--	--
	Kahuku High	--	--	--	--	--
	Kailua High	56/0	10/0	--	--	66/0 (66)
	Kalaheo High	--	--	--	--	--
	King Inter.	79/0	--	--	--	79/0 (79)
		135/0	10/0	--	--	145/0 (145)

(As of 10/5/73)

NOTE: Male/Female

Table IV
Secondary School
Enrollment in Electricity Courses
1973 - 74
Page 2

DISTRICT	SCHOOL	1125	1126	2012	2013	ENROLLMENT (TOTAL)
HAWAII	Hilo High	--	--	--	--	--
	Honokaa High	--	--	--	--	--
	Laupahoehoe High	--	--	--	--	--
	Ka'u High	--	--	--	--	--
	Konawaena High	28/1	--	--	--	28/1 (29)
	Kohala High	--	--	--	--	--
	Pahoa High	--	--	--	--	--
		28/1	--	--	--	28/1 (29)
MAUI	Baldwin High	31/0	--	--	--	31/0 (31)
	Hana High	--	--	--	--	--
	Lahainaluna High	20/0	--	--	--	20/0 (20)
	Lanai High	--	--	--	--	--
	Maui High	--	--	--	--	--
	Molokai High	--	--	--	--	--
		51/0	--	--	--	51/0 (51)
KAUAI	Kapaa High	32/30	59/3	--	--	91/33(124)
	Kauai High	--	--	--	--	--
	Waimea High	--	--	--	--	--
		32/30	59/3	--	--	91/33(124)
SUBTOTAL		613/35	69/3	15/1	--	697/39
TOTAL		648	72	16	--	736

RECOMMENDATIONS

1. Standardize community college electricity programs as to program requirements, course descriptions, content, numbers, titles, and program terminology by:

    a. Adopt suggested "Electrical Technology Program" as developed by an Articulation Committee.

    b. Establish periodic evaluation of progress by the continuation of the Articulation Committee under direction of the State Director for Vocational Education (S.D.V.E.)

2. Continuous job analysis of the electrical industry to up-date the content, knowledge, and skills of electricity courses.

    a. Utilize of Advisory Committees.

    b. Share of "Job Analysis" studies.

    c. Propose continued research.

    d. Utilize Bi-Annual Program Evaluation reports. (Recommend Statewide Community College Program Evaluation be reactivated and continued.)

3. Establish workshops to up-date instructors by:

    a. Request the State Director to initiate through Trades and Industry teacher educator in-service courses and/or workshops.

    b. Electricity instructors should request annual in-service workshops through administrative channels beginning 1974-75 Interim Period.

    c. Have the electrical industry invite instructors to participate in their workshops such as those sponsored by the Pacific Electrical Contractors Association (PECA).

4. School administrators should encourage secondary and community college electricity instructors to make better use of existing program improvement resources:

    a. Inter-agency visitation time.

    b. Professional associations.

    c. Newsletters and bulletins.

    d. Career information center.

5. The D.O.E. should encourage high schools to establish and offer more electrical courses for students to explore as well as pursue electrical careers.

6. Implement the "Proposed Electrical Technology Program" as outlined on the following pages.

PROPOSED ELECTRICAL TECHNOLOGY PROGRAM FOR THE COMMUNITY COLLEGES

The following proposal represents a general consensus of educators from the secondary schools and university system.

After careful consideration, it is recommended that the proposed Electrical Technology for Community College program, as outlined in Chart III, page 35 be implemented to insure horizontal and vertical articulation. The student may enter the Electrical Technology Program in the community college system either from the military, other community colleges or institutions of education, as adults or directly upon graduation from high school. It is anticipated that the student may enter the Electrical Technology Program without any loss of time, credit, or repeating of courses. As indicated by the flow chart, a student will have the option to challenge courses by examination.

It is proposed that a total of 62 credits be required for the Associate in Science Degree in Electrical Technology. This total includes 38 credits in electrical technology courses, 18 credits in English, mathematics, speech, physics, blueprint reading, and social science, and six elective credits in any area. A student may receive the Certificate of Achievement by fulfilling the 38 credits in electrical technology courses plus math and blueprint reading (6 credits) for a total of 44 credits.

Although the Electrical Technology Program is designed as a two year program, a student may wish to complete only a few courses to equip him with some basic technical skills and knowledge for immediate employment. Upon completion of the two year program, the student may seek immediate employment or pursue further training in higher education.

To improve vertical articulation between secondary schools and the community colleges, it is recommended that credit be granted to students that have taken a minimum of two school years of electricity or electronics courses. Granting of such credit would be based upon recommendation of the secondary school instructor and the passing of an examination designed by the community college electricity instructors. The credit granted by the community colleges would be limited to the following courses:

EL 100 Introduction and Orientation

EL 101 Fundamentals of Electricity

This recognition of electricity and electronics coursework at the secondary level of education would help meet the objective of minimizing duplication of time and effort in the state education system.

The following behavioral objectives were developed in order to establish a common ground among the community colleges to make the Electricity Program more effective:

1. The student will be able to demonstrate the processes of distributing, controlling, and utilizing electricity for heating, lighting, and signaling purposes.
2. The student will be able to apply the codes, law , and formulas of electricity in computing of electrical quantities, such as voltage drop, current, resistance, and power in the three basic types of circuit configuration.
3. Given a variety of electrical devices, the student will be able to connect these components together in order to demonstrate the various circuit configurations including simple lighting and signaling systems.
4. Given a variety of electrical test instruments, the student will be able to check, in an effective and safe manner, for electrical quantities, such as voltage, current and resistance.
5. The student will be able to identify and be able to use tools, machines and equipment required for electrical installation in an efficient and safe manner.
6. The student will be able to define and apply the general provisions of the National Electrical Code in the installation of electrical materials.
7. The student will be able to interpret and work from residential construction blueprints, determine materials and equipment needed, lay out and install the complete interior electrical wiring system for residential dwelling.

8. The student will be able to service, maintain and repair domestic appliances, portable electric tools, and small household appliances.

9. The student will be able to apply the theory of operation for three-phase power generation and distribution system in the process of installing three-phase equipment, such as transformers, motors, alternators, and associated control equipment that comprise the complete system.

10. The student will be able to identify and differentiate between direct current and alternating current rotating machinery, such as motors and generators. He will be able to install, in accordance to the National Electrical Code, an alternating current motor and controller system (10 h.p. or less), check, troubleshoot, and test for operation upon completion.

11. The student will be able to apply the fundamentals of electronic devices, such as the vacuum tube and semiconductor to install electrical systems involving machinery that are controlled by electronic static equipment.

The student flow chart for the proposed statewide Electrical Technology Program is shown in Chart III on the following page.

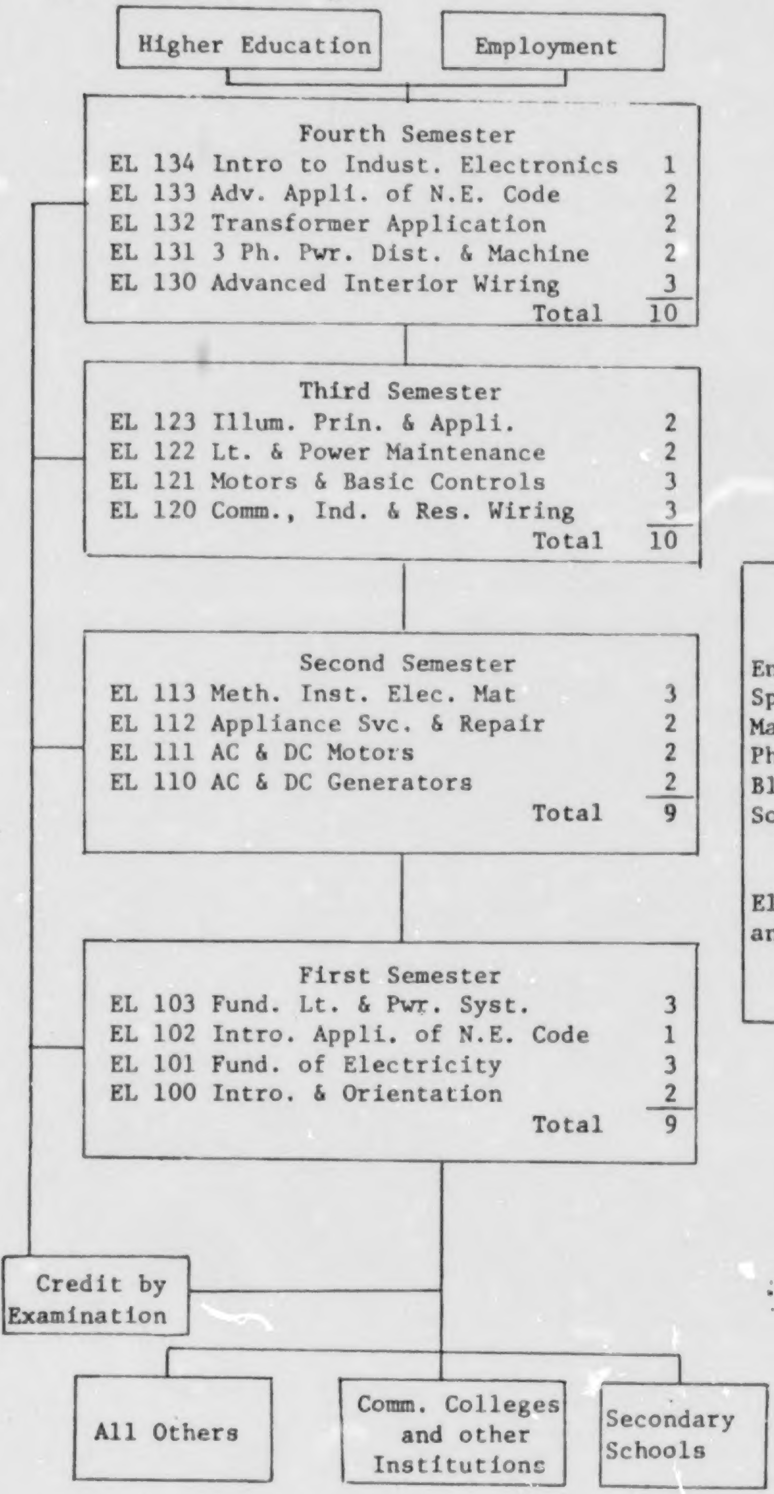
Proposed Electrical Technology Program for Community Colleges

COURSES	Credits for A.S. Degree	Credits for Certificate of Achievement
First Semester		
EL 100, 101, 102, 103	9	9
Mathematics	3	3
Blueprint Reading	3	3
Second Semester		
EL 110, 111, 112, 113	9	9
English	3	
Physics	3	
Third Semester		
EL 120, 121, 122, 123	10	10
Speech	3	
Elective	3	
Fourth Semester		
EL 130, 131, 132, 133, 134	10	10
Electives	6	
TOTALS	62	44

All Electrical Technology Courses are lecture-lab instructions based on 2 contact hours for each credit.

Chart III

Proposed Student Flow Chart for Statewide Electrical Technology Program for Community Colleges.


Higher Education
Employment
Credit by Examination
All Others
Comm. Colleges and other Institutions
Secondary Schools

Fourth Semester

EL 134 Intro to Indust. Electronics	1
EL 133 Adv. Appli. of N.E. Code	2
EL 132 Transformer Application	2
EL 131 3 Ph. Pwr. Dist. & Machine	2
EL 130 Advanced Interior Wiring	3
Total	10

Third Semester

EL 123 Illum. Prin. & Appli.	2
EL 122 Lt. & Power Maintenance	2
EL 121 Motors & Basic Controls	3
EL 120 Comm., Ind. & Res. Wiring	3
Total	10

Second Semester

EL 113 Meth. Inst. Elec. Mat	3
EL 112 Appliance Svc. & Repair	2
EL 111 AC & DC Motors	2
EL 110 AC & DC Generators	2
Total	9

First Semester

EL 103 Fund. Lt. & Pwr. Syst.	3
EL 102 Intro. Appli. of N.E. Code	1
EL 101 Fund. of Electricity	3
EL 100 Intro. & Orientation	2
Total	9

Required Courses

	Cert.	A.S.D.
English		3
Speech		3
Math	3	3
Physics		3
Blue Print Rdg.	3	3
Social Science		3
Total	6	18
Electives from any area		6
Grand Total	6	24

The following course titles, numbers and credits are recommended for the Electrical Technology Program:

Credit Hrs.	Course No.	Course Title
2	EL 100	Introduction and Orientation
3	EL 101	Fundamentals of Electricity
1	EL 102	Introduction and Application of the National Electrical Code
3	EL 103	Fundamentals of Light and Power Systems
2	EL 110	A.C. and D.C. Generators
2	EL 111	A.C. and D.C. Motors
2	EL 112	Appliance Service and Repair
3	EL 113	Methods of Installation of Electrical Materials
3	EL 120	Commercial, Industrial, and Residential Wiring
3	EL 121	Motors and Basic Controls
2	EL 122	Lighting and Power Maintenance
2	EL 123	Illumination Principles and Applications
3	EL 130	Advanced Interior Wiring
2	EL 131	Three-Phase Power, Distribution, and Machinery
2	EL 132	Transformer and Applications
2	EL 133	Advanced Applications of the National Electrical Code
1	EL 134	Introduction to Industrial Electronics

IMPLEMENTATION PLAN

The following implementation plan for the new Electrical Technological Program for the community colleges is recommended:

Phase I - To be completed by the Fall of 1975.

1. Prepare standardized course descriptions, numbers and titles for adoption by the community colleges.
2. Submit the proposal for the new Electrical Technological Program for approval by the proper authorities.
3. Develop evaluation instruments for students that want to challenge courses EL 100 and/or EL 101. These instruments would be used primarily by high school students that have had courses in electricity or electronics.
4. Develop evaluation criteria for Phase I of the implementation plan.

Phase II - To be completed by the Fall of 1976.

1. Evaluate Phase I.
2. Submit an evaluation report to the statewide articulation committee.
3. Submit recommendations for improvement of the new Electrical Technological Program to the State Director for Vocational Education.

EVALUATION OF THE EFFECTIVENESS OF THE ARTICULATION PROPOSAL FOR THE ELECTRICITY PROGRAM

The following criteria and guidelines are recommended for evaluating the effectiveness of the articulation proposal for the Statewide Electricity Program:

1. The number of students entering community college who have taken one or more electricity or electronics courses in high school.
2. The number of electrical course offerings at the secondary and community college levels.
3. The number of secondary school students who have taken more than one electricity course while in high school.
4. The number of secondary school graduates with electricity backgrounds who have applied and challenged the basic electrical course EL 100 and EL 101 requirements at the community colleges.
5. The number of community colleges that implement Phase I of the proposed Implementation Plan.

APPENDICES

Appendix A

GLOSSARY

1. Advisory committee

A group of persons, usually from outside the field of education selected because of their knowledge and expertige in certain areas to advise educators regarding vocational programs. Such committees can operate at the federal, state and local levels and often function under names other than that of advisory committee.

2. Apprentice training

Occupational training undertaken by a trade or industry, usually in cooperation with a public school. The training program usually is designed by a committee of employer-employee representatives and directed by them. The apprentice works under a written agreement and is paid a graduated percentage of the journeyman wage while in training.

3. Continuing education

Any extension for young person and adults of opportunities for reading, study and training at the higher education level following completion of, or withdrawal form, full-time school or college programs. The service is usually provided by special schools, centers, colleges or institutes, or by separate administrative divisions such as university extension. Continuing education usually emphasizes flexible rather than traditional or academic programs.

4. Modular scheduling

Organization of uniform portions or modules of time which are combined in various multiples, as appropriate for various courses and activities. Each module is generally a fraction of the usual time required for a class period.

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Appendix A (Cont'd)

5. Electrical-appliance-serviceman apprentice

Major-appliance-serviceman apprentice, electrical. Performs duties as described under APPRENTICE. (any ind) 827.281

6. Electrical-appliance-serviceman foreman

Supervises and coordinates activities of Electrical-appliance servicemen engaged in servicing, repairing, and installing electrical household appliances. Requisitions tools, supplies, and replacement parts. Performs other duties as described under FOREMAN. (any ind) 827.131

7. Electrical-appliance-serviceman helper

Assists Electrical-appliance serviceman in installing, servicing, and repairing electrical household appliances: Connects clothes drier, dishwashing machine, refrigerator, washing machine, or other appliance to current outlet. Cleans and washes parts, using wire brush, buffer, and solvent, to remove carbon, grease, and dust. Unwraps accessories, such as shelves, drain pan, and drawers, and secures them in position in appliance. Transports appliance, using handtruck. Performs other duties as described under HELPER. (any ind) 827.887

8. Electrical-fixture man

Fixture relamper; fluorescent lamp replacer; lamp boy; lamp-renewal boy; light-bulb replacer. Replaces electric light fixture parts, such as bulbs, fluorescent tubes, and starters. Repairs fixture parts, such as switches and sockets, using handtools. Requisitions and keeps supply of bulbs, tubes, and replacement parts. (any ind) 389.887

9. Electrician

Plans layout and installs and repairs wiring, electrical fixtures,

Appendix A (Cont'd)

apparatus, and control equipment: Plans new or modified installations to minimize waste of materials, provide access for future maintenance, and avoid unsightly, hazardous, and unreliable wiring, consistent with specifications and local electrical code. Prepares sketches showing location of all wiring and equipment or follows diagrams or blueprints prepared by others, insuring that concealed wiring is installed before completion of future walls, ceilings, and flooring. Measures, cuts, bends, threads, assembles, and installs electrical conduit, using such tools as hacksaw, pipe threader, and conduit bender. Pulls wiring through conduit, assisted by ELECTRICIAN HELPER. (any ind) 824.281

10. Electrician foreman

Electrician supervisor; foreman, electrician. Supervises and coordinates activities of ELECTRICAL REPAIRMEN AND ELECTRICIANS engaged in construction, maintenance, and repair of electric power, lighting, and communication systems of buildings, factories, and transportation equipment: Plans wiring and installation of equipment and fixtures, such as motors, generators, switches, and fuse boxes, according to blueprints, schematic drawings, and sketches. Inspects wiring and fixtures for conformity to company specifications or municipal codes, using test equipment, such as voltmeter and ohmeter. Performs other duties as described under FOREMAN. May supervise only those workers engaged in maintenance of electrical systems and be designated BUILDING-MAINTENANCE SUPERVISOR, ELECTRICAL; ELECTRICIAN FOREMAN, MAINTENANCE. (any ind) 829.131

Appendix A (Cont'd)

11. Electrician helper

Assists ELECTRICIAN to install and repair electrical wiring, fixtures and equipment, performing any combination of the following tasks; Measures, cuts, and bends wire and conduit, using ruler and handtools, such as pipe benders and hacksaw. Drills holes for wiring, using power drill, and pulls or pushes wiring through opening. Assists in lifting, positioning, and fastening objects, such as wiring, conduit, and motors. Performs minor repairs, such as replacing fuses, light bulbs, and light switches, using electricians' handtools. Maintains tools and equipment and keeps supplies and parts in order. Disassembles such defective electrical equipment as motors, using handtools. Performs other duties as described under HELPER. (any ind) 829.887

12. Electrician, powerhouse

Repairs and maintains electrical equipment in generating station or powerhouse: Tests defective equipment to determine cause of malfunction or failure, using voltmeter, ammeters, and related electrical testing apparatus. Notifies such plant personnel as POWER-PLANT OPERATOR (any ind) or SWITCHBOARD OPERATOR of necessary equipment downtime requiring changes from normal generating and transmission equipment operation to maintain uninterrupted service. (any ind) 820.281

13. Power-plant operator or switchboard operator

Repairs and replaces equipments, such as relays, switches, supervisory controls, and indicating and recording instruments. Tests and repairs switchboard and equipment circuitry, interpreting wiring

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Appendix A (Cont'd)

diagrams to trace and connect numerous wires carrying current for independent functions. Cleans and repairs brushes, commutators, windings, and bearings of generators, motors, and converters. Tests and maintains transmission equipment, such as oil circuit breakers and transformers.

14. Electric-meter installer I

Installs and removes electric meters on customers' premises: Secures meter to wall or floor with large screws, using screwdriver. Bares ends of building wires and connects wires to proper terminal of meter, using handtools. Covers bare electric-wire connections with tape and seals meter with sealing device. Sets recording mechanism of demand meters to time of day by turning knob. Tests meters for flow of current by turning on electric lights and observing recording dials or by using portable test lamp and socket. Removes meters by breaking seal, disconnecting wires, and loosening screws to free meter from wall. Reads meters after installation and before removal. May install small current transformers on wall and make proper connections to meter. May bolt crosspiece or hanger to wall to hold meter, using drill to make holes. May affix meters to preinstalled connection boxes. (any ind) 821.381

15. Electric-meter installer II

Installs electric meters in preinstalled meter-connection boxes and closes switch to connect service: Breaks seal on box previously connected to building wiring, using pliers, and tests box for current flow with test lamp. Fits meter onto prongs extending from top of box and turns setscrews to secure prongs to meter, using screwdriver.

Appendix A (Cont'd)

Fastens meter to wall with screws and seals with sealing device. Pushes slide of connection box into position to provide contact between box and inspects box wiring for proper electrical connections. Disconnects service by pulling out connecting slide between meter and box and resealing connection box. Records meter reading before connecting or after disconnecting service. II 821.884

16. Electric-meter reader and electric-meter repairman

Inspects; adjusts; and repairs electric meters used for recording electric current consumption: Disassembles defective meters, using screwdrivers, wrenches, and pliers. Examines various parts of meter for wear and detects warped or bent parts with straightedge. Cleans sensitive electric parts by soaking them in carbontetrachloride solution. Removes dirt from other parts, using brushes, sandpaper, and soap and water. Reassembles meter, using new or repaired parts. May test meters for accuracy or for correctness of assembly and dielectric strength, using special testing apparatus. May repair clocklike registering device of demand meters but does not repair clocks in meters. May repair such electric components as instrument transformers and relays. May install meters. 729.281

Appendix B

COURSE DESCRIPTIONS FOR ELECTRICITY

Honolulu Community College

IE 21 - Industrial Electricity (3)

Pre-requisite: ENG 10, MATH 8, 9
Co-requisite: PHYSC-23

Signal wiring, signal system involving series and parallel wiring, use of common ringers, door openers, relays, announciators, burglar and fire alarm systems (9 hrs. lab.).

IE 22 - Industrial Wiring Systems (4)

Pre-requisite: IE 21

Basic wiring for light, heat, and power using EMT, rigid, conduct, B.X. cable, wire mold and other raceway and wiring system, wiring installation involving single pole, 2-way, 4-way, double pole switches. National Electrical code and Trade Safety practices. (12-hr. lab.).

IE 23 - Industrial Wiring System Theory (3)

Pre-requisite: IE 21

National Electrical Code, wire size calculation, circuiting, mechanical and electrical standards of installation, trade standards, power calculations for two- and three-wire systems, circuit protection, load factor calculations (3 hr. lect.).

IE 27 - Electrical Blueprint Drafting (2)

Residential and industrial wiring systems code, theory, installation (2 hr. lect.).

IE 40 - Electrical Power - Advanced Industrial Wiring Systems (4)

Pre-requisite: IE 21

Line distribution systems, two- and three-wire services, installation of meters and main disconnects. DC machinery, generators, series, shunt and compound, field and amateur control. Series, shunt and compound motor 3 and 4 point starting boxes. Parallel operation of generators. National Electrical Code. (12 hrs. lab.).

Appendix B (Cont'd)

IE 41 - Electrical Power - C. C. Machinery (3)

Pre-requisite: IE 21

Purposes and format of laboratory reports, techniques of laboratory measurement, selected experiments in operation and control of D. C. generators, short shunt and long shunt operation, 3-wire systems, equalizer connections E. C. motors characteristics, filed and armature control and calculations. National Electrical Code (3 hrs. lect.).

IE 42 - Alternating Current Laboratory (4)

Pre-requisite: IE 21

General of single and polyphase power, parallel operation of alternators, single phase motors, split phase, capacitor start shaded pole, series, etc. Synchoronour motors, National Electrical Code. Three phase induction motors, dual voltage would rotor, manual and automatic controllers, compensators, transformers. (12 hrs. lab.).

IE 43 - Alternating Current Theory (3)

Pre-requisite: IE 21

Reactive circuits, series and parallel calculations for single and three phase systems. Instruments, transformer applications. (3 hrs. Lect.).

PHYS 23 - Fundamentals of Electricity (4)

Magnetism, electric charges, conduction and inductions, electric power, chemical effects of electricity, electromagnetism, chelectricmotor, electromagnetic induction, the generator, the transformer, inductive reactance, power factor, rectifiers, electron theory. (3 hrs. lect. & 3 hrs. lab.).

Box, wiring various types of fixture, overload protection.

Appendix C

COURSE DESCRIPTIONS FOR ELECTRICITY

Hawaii Community College

ELECT 21 - Interior Wiring (5 cl. hrs., 20 lab. hrs.) 12 cr.

Safety regulation and codes, use of hand tools and equipment. Basic interior wiring for light and power, electrical plants and symbols, series and parallel circuits, electrical code interpretations, and residential wiring systems and circuitry.

Instruction includes procedures in making electrical connections; forming circuits; use of electrical test instruments; various methods of wiring such as N. M. cable, electrical metallic tubing, surface metal raceway.

ELECT 22 - Basic Electricity (5 cl. hrs., 20 lab. hrs.) 12 cr.

Basic electron theory, Ohm's law, batteries, electro-magnetism, motors, and generators, electrical conductors and wire sizes, wiring methods and materials, basic electrical system analyzing. N. E. C.

Instruction includes motor trouble shooting and repair, small motor circuit design, wiring panel.

ELECT 42 - Industrial and Commercial Wiring (5 cl. hrs. + 20 hrs.) 12 cr.

Polyphase circuits and wire and delta connections, transformers (single phase and three phase), various transformer connections and applications, industrial and commercial blueprint reading, emphasis on specification and N. E. C. test equipment.

Instruction includes wiring connections of transformers for various applications, voltage tests observations, fire alarm systems, motor controls, lighting controls and hazardous location wiring, trouble shooting electrical systems.

ELECT 41 - Alternating Current (5 cl. hrs. + 20 hrs. lab.) 12 cr.

Alternating current principles, series and parallel circuit characteristics, single and 3-phase services, commercial and industrial wiring systems, N. E. C. basic motor controls.

Instructions include installations of single phase and three phase services using various wiring methods, testing for grounds, insulation, light and power loads, residential wiring, evaluating installations, conduit bending, basic motor control hookups.

Appendix D

LEVELS OF ELECTRICAL OCCUPATIONS

The jobs in the electrical occupation are numerous. The Dictionary of Occupational Titles lists four levels of electrical occupations.

LEVEL I

Electrical appliance serviceman helper
Electrical appliance repairman
Electrical fixture man
Electrician helper
Electrician apprentice
Electric motor winder apprentice
Lineman apprentice
Electrical material expediter
Electrical supply clerk

LEVEL II (JOURNEYMAN) (** requires State License)

Electrical appliance repairman
Appliance repairman
Electrical appliance serviceman
Motor coil winder
Lineman
Journeyman electrician **
Maintenance electrician **

LEVEL III (* requires State License)

Electrician foreman
Supervising electrician*
Estimator
Instructor, Vocational Training
Apprentice instructor
Supervisor line dept.
Electrical sales manager

LEVEL IV (* requires State License)

Electrical contractor*
Electrical Inspector

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COLLABORATIVE ROLES AND FUNCTIONS
OF
OCCUPATIONAL EDUCATION PROGRAMS

REPORT

Submitted by Electronic Technology Team

June 1974

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INTRODUCTION

Effective means of articulation between levels of vocational-technical programs that exist in the community colleges and secondary schools must be implemented in order to prevent unneeded duplication of instruction or gaps in the curriculum. Hence, this document presents articulation agreements in Electronic Technology programs that were formulated by the instructors of both the community colleges and the secondary schools of Hawaii.

Since educational and career development is a continuous process, educational programs in both the secondary schools and the community colleges need to be planned, conducted, and evaluated jointly. Articulation efforts should provide the scope and sequence of education necessary for each student to develop to his full potential without unnecessary duplication of instruction and delay in attaining his educational and career objectives.

Through the Educational Professions Development Act (EPDA) Part F, Section 553, Project for Advanced Study in Vocational-Technical Education, articulation problems were examined and discussed, recommendations made, and implementation plans formulated. The articulation agreements in this document are the culmination of the EPDA project and were accepted by the instructors in Electronic Technology from the various community colleges and the secondary schools of Hawaii.

GOALS AND OBJECTIVES

Goal

To provide the scope and sequence of educational experiences for all electronic technology students which will enable them to achieve their vocational and educational aims in the most effective and efficient manner.

Objectives

1. To minimize duplication of course content and to provide a progressive flow in the educational experiences of each electronic technology student.
2. To standardize courses and credits in the community colleges to facilitate the student's transition from the secondary school to the community college as well as from one community college to another.
3. To increase the options available to all electronic technology students.
4. To establish a clearinghouse for disseminating information on electronics equipment and supplies.
5. To establish and improve the procedures of obtaining employment and manpower projection information.
6. To promote the effective utilization of community, industrial, business, union, and government resources in the instructional program and in the establishment of electronic technology advisory committees.
7. To provide for the continuous upgrading of the quality of instruction through in-service activities and college courses.
8. To provide for the inclusion of electronics math in the electronic technology program at the secondary schools.

CURRENT STATUS

The Secondary School Programs

Currently there are two existing programs in electronic technology available to secondary school students: (I) The Industrial Arts Program which is primarily an exploratory program, and (II) The Industrial-Technical Program which is primarily for entry level occupational training in electronic technology (see chart below). The Industrial-Technical Program has not been fully implemented in all the secondary schools of the State, therefore, during this interim period, schools without the Industrial-Technical Program in electronic technology will continue to offer a second year Industrial Arts Electronics Program. When the Industrial-Technical Program in Electronic Technology is implemented in all secondary schools, the normal student flow will resemble the second horizontal progression in the following chart.

Authorized Courses by Grade Level
and Code Number

	10th Grade	11th Grade	12th Grade
I	1130*	1130 1131* (interim)	1130 1131 (interim)
II	1130*	1130 2010**	1130 2010 2011**

*Industrial Arts (Exploratory -- Numbers coded in the 1000 series)
**Industrial-Technical (Vocational -- Numbers coded in the 2000 series)

The Community College Programs

Presently, the two of seven campuses that offer programs in electronic technology leading to an Associate of Science Degree, are the Honolulu Community College and the Hawaii Community College.

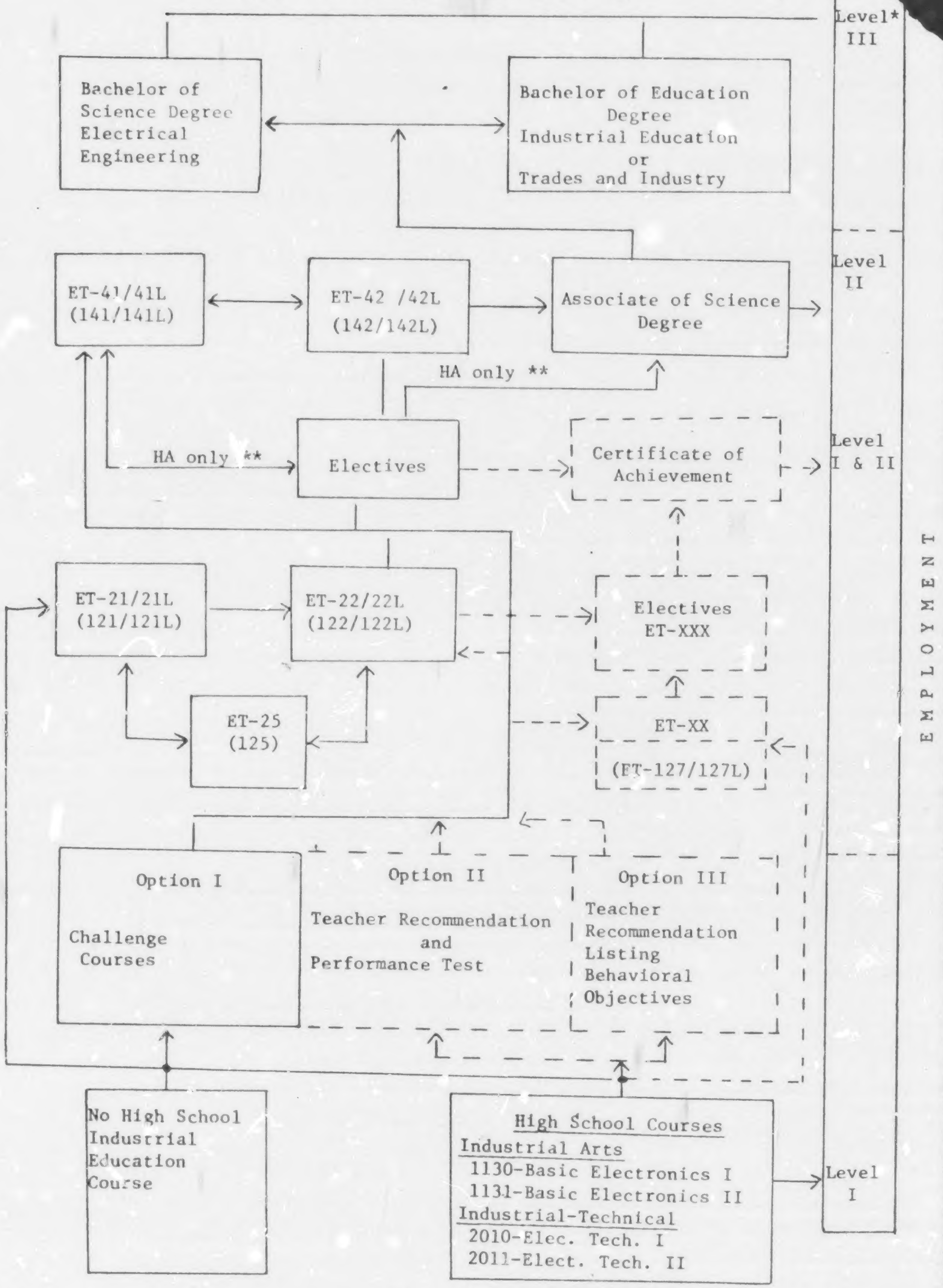
Students enter the Electronic Technology program during the Fall and Spring semesters. They must be eighteen years of age or a high school graduate. High school students may participate in the Early Admission program by special arrangement of the counselors with the consent of the Electronic Technology Department.

Upon successful completion of the program for an Associate of Science Degree, a student may seek employment or pursue further education in a four year college.

A Current and Proposed Student Flow Chart

Once horizontal and vertical articulation have been achieved by the community colleges and secondary schools, students should be able to progress and attain their educational and employment goals with greater facility. In the following chart, the current progression and options available to students entering the electronic technology program are indicated by the solid lines and the proposed progression and options are indicated by the dotted lines.

CURRENT AND PROPOSED STUDENT FLOW CHART


Level* III
Bachelor of Science Degree Electrical Engineering
Bachelor of Education Degree Industrial Education or Trades and Industry
Level II
ET-41/41L (141/141L)
ET-42 /42L (142/142L)
Associate of Science Degree
HA only **
Level I & II
HA only **
Electives
Certificate of Achievement
ET-21/21L (121/121L)
ET-22/22L (122/122L)
Electives ET-XXX
ET-25 (125)
ET-XX
(ET-127/127L)
EMPLOYMENT
Option I
Challenge Courses
Option II
Teacher Recommendation and Performance Test
Option III
Teacher Recommendation Listing Behavioral Objectives
No High School Industrial Education Course
High School Courses
Industrial Arts
1130-Basic Electronics I
1131-Basic Electronics II
Industrial-Technical
2010-Elec. Tech. I
2011-Elect. Tech. II
Level I

*See APPENDIX III for examples

** Hawaii Community College

PROBLEMS BETWEEN AND RECOMMENDATIONS FOR SECONDARY SCHOOLS AND COMMUNITY COLLEGES

Horizontal Articulation

Before any articulation agreement between the community colleges and secondary schools can be achieved, horizontal articulation problems among these institutions must first be resolved. Therefore, in the following pages the salient problems in horizontal articulation are identified, recommendations are made, and implementation plans are presented.

Problem I

The secondary schools' electronic technology programs are not sufficiently uniform in content coverage and emphasis, hence, minimizing the chances for maximum articulation between the community colleges and the secondary schools.

Facts

The existence of a state guide for electronic technology programs in our secondary schools does not insure its use in a consistent manner. There are evidences of inconsistencies in program emphasis which are in part due to the fact that the state guide is not being used effectively. Other reasons for program inconsistencies are: limitation in resources and facilities, unique local school conditions (e.g. limited enrollments), differences in student interest and exposures, differences in teacher talents, experiences, and judgement, inappropriate teacher placement, and lack of proper teacher orientation to the utilization of the guide.

It is Recommended:

1. That the electronic technology course guide for secondary schools be developed to provide electronic technology instructors the opportunity to react and agree on the course content.
2. That the draft copy of the electronic technology course guide be reviewed by electronic technology instructors.
3. That the secondary schools electronic technology instructors adhere to the agreed course content, thereby carrying out maximum articulation with the community colleges and making adaptations necessitated by existing constraints such as limitations of facilities, resources, teacher experience, and student enrollment.

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4. That the secondary school principals call faculty or special meetings to continue the articulation process within their schools. Teachers, counselors, registrars and administrators should be aware of programs that structurally have horizontal and vertical articulation, such as in electronic technology, since this knowledge will be immeasurably useful as they work with and help students in their career development. The members of the EPDA Articulation Institute, Part F, Section 553, Electronic Technology Division, can serve as resource personnel for their meetings.

5. That all the electronic technology instructors and secondary school principals be provided copies of the articulation agreement between the community colleges and secondary schools.

Implementation

The Vocational-Technical Curricula section of the Department of Education should take the leadership and initiative in the development of the above mentioned guide. The reaction and subsequent agreement on the guide should be completed by April 1975, orientation meetings on the revisions by August 1975, and the program implementation to begin by September 1, 1975.

Starting September 1, 1975, all secondary electronic technology teachers will adhere to the agreed course content; but schools unable to comply completely because of the constraints described above, will make adaptations as necessary.

As soon as the agreement is accepted, copies will be sent to all secondary and community college electronic technology instructors and secondary school principals.

Problem II

There is a need to review and agree upon the current course offerings at the community colleges and to disseminate this information to effect horizontal articulation.

Facts

1. Instructional units and courses are not in consonance with regard to titles, numbers, credit hours, and total hours (See Chart I).
2. There are differences in scheduling.
3. There are no provisions for course equivalency to effect a sound, intercollege transfer of students.

Alternative Solutions

1. Establish uniformity in course offerings concerning titles, numbers, credit hours, and total hours.

2. Provide more flexibility and options for students.

3. Establish an articulation committee of community college instructors to identify problems and recommend curricular changes.

4. Distribute both the amended course outlines and student flow charts.

It is Recommended:

1. That the provosts of community colleges with electronic technology programs establish an articulation committee to review and agree upon the uniformity of courses and effect future changes.

2. That the electronic technology programs in the community colleges provide more flexibility and student options with the current available resources.

3. That through the medium of established community college curriculum committee procedures, an agreement be adopted for course equivalency without regard for the time being, to differences in credit hours or total contact hours.

4. That the community colleges continue to distribute course outlines and student flow charts to all community colleges.

Implementation

The proposal for state-wide uniformity of courses in electronic technology shall be presented by the electronic technology department through established curriculum committee procedures by the Spring of 1975.

The provosts of community colleges with electronic technology programs shall establish an articulation committee by the Fall of 1975.

CHART I

COMMUNITY COLLEGES ELECTRONIC TECHNOLOGY PROGRAMS
(Course Equivalencies)

General Categories	Community College	Course*	Credits	Hours
Basic Electricity	Honolulu Hawaii	ET 21/21L ET 21	5/3 7	5/9 5/6
Basic Electronics	Honolulu Hawaii	ET 22/22L ET 22	5/3 7	5/9 5/6
Pulse Circuitry	Honolulu Hawaii	ET 41/41L ET 41	5/2 7	5/6 5/6
Radar & Microwave (Hon) Electronics Circuits & Systems (Hawaii)	Honolulu Hawaii	ET 42/42L ET 42	5/3 5	5/9 3/6
Instruments	Honolulu Hawaii	ET 44 ET 43	2 5	2 3/6
Computer	Honolulu Hawaii	ET 43 ET 47	3 7	3 4/9
Communication	Honolulu Hawaii	ET 54/56 ET 26 ET 45	2/1 3 7	2/3 3 4/9
Industrial	Honolulu Hawaii	ET 45 ET 46	3 7	3 4/9
Servicing	Honolulu Hawaii	ET 46 ET 48	3 7	3 4/9
Ancillary	Honolulu Hawaii	ET 24 ET 25 ET 47 ET 23	2 2 2 3	2 2 2 2/4

*See APPENDIX II for the details of courses listed.

Vertical Articulation

Vertical articulation is essential between the different levels of educational institutions to accommodate differences in ability and learning rates of students. To effectively help electronic technology students progress toward their educational goals with a minimum of delay, the following articulation agreements relative to the Electronic Technology programs between the secondary schools and community colleges are presented.

Problem III

Presently, there are limited provisions for vertical articulation between the secondary schools and the community colleges.

Facts

1. The procedures for challenging courses and/or for advance placement are not clearly established at all community colleges.
2. There is duplication of training between the secondary schools and the community colleges.
3. There is a lack of an exhange of information between the secondary schools and the community colleges.

Alternative Solutions

1. The following options for advanced placement be provided to secondary students who enroll in the community college electronic technology program:
    a. A student may challenge a community college course.
    b. A student may submit a detailed written recommendation from his secondary school teacher and take a performance test at the community college.
    c. A student may submit a written recommendation listing specific behavioral objectives completed by his secondary school teacher.
2. The provosts of the community colleges and the district superintendents jointly exercise the leadership in the establishment of an official communication channel between the community colleges and the secondary schools of the Department of Education.

3. The community colleges distribute course outlines and student flow charts to the secondary schools of the Department of Education.

It is Recommended:

That all the alternative solutions listed above be accepted and implemented.

Implementation

The community colleges may presently exercise any option that is feasible and desirable. The total optional program shall be implemented by the Fall of 1976.

In order to continue and to maintain a close liaison and cooperation, an official channel is necessary and vital. This channel shall be established by the district superintendents and the provosts of the the community colleges by the Spring of 1975. Also, in keeping with the official channel, all information on course outlines and student flow charts shall be distributed to all secondary school electronic technology instructors and school principals to keep them apprised of the latest changes.

Problem IV

Students entering the community college lack the proper mathematics preparation for the electronic technology program.

Fact

Too many students are failing the community college mathematics placement examination to meet the mathematics requirement for entry into the electronic technology program.

Alternative Solutions

1. Each secondary school electronic technology instructor stress and teach electronics mathematics as part of the electronics course.
2. A separate technical mathematics course for electronics be offered and taught by secondary school electronic technology instructors.
3. Mathematics and electronic technology instructors at the secondary schools establish cooperative electronic mathematics courses.

It is Recommended

1. That each secondary school electronic technology instructor include units of electronics mathematics in the course outline, and stress the importance of mathematics continuously throughout the year.

2. That every secondary school with an electronic technology program strive to offer an electronic technology mathematics course.

Implementation

Every instructor teaching electronic technology courses shall re-examine his present course content and include units in electronics mathematics. The importance of mathematics in the field of electronics and especially for matriculating in the community college program should be heavily emphasized. Each instructor shall include mathematics units in his electronics program by September of 1974.

The need for a separate electronic technology mathematics course is recognized but because of fiscal constraints and program priorities, this recommendation should be implemented whenever feasible.

Problem V

Many students need an alternative program for early job entry.

Facts

1. There is no statewide electronic technology program leading to a Certificate of Achievement.
2. Many students seek early employment.
3. Many students have limited occupational interests.

Alternative Solutions

1. A program leading to a Certificate of Achievement be established at community colleges with electronic technology programs.
2. Short term courses be offered to prepare for specific job skills.

It is Recommended:

1. That each community college with an Electronic Technology Department establish a program leading to a Certificate of Achievement (see Appendix III).

Implementation

Every community college with an Electronic Technology Department shall propose a program leading to a Certificate of Achievement through established channels by Fall semester 1975.

Problem VI

In order to establish uniform policies and/or to ensure total articulation of programs, there is a need to review the current status and organization of the electronic technology advisory committees.

Facts

1. Each community college presently has an appointed electronic technology advisory committee.
2. All secondary schools do not have electronic technology advisory committees.

Alternative Solutions

1. Establish a statewide electronic technology advisory committee representing all community colleges and secondary schools.
2. Establish a districtwide electronic technology advisory committee representing all community colleges and secondary schools.
3. Include secondary school representative(s) to the present community college electronic technology advisory committees.

It is Recommended:

That secondary school representative(s) be included in the present community college electronic technology advisory committee.

Implementation

The implementation plan of the above recommendation shall be initiated at the first meeting of the community college advisory committee in the Fall of 1975. Secondary school instructors shall submit names of prospective representatives to the District Office by February 1975, and the representative shall be selected from the established list. The representatives selected shall be notified and their names submitted to the community college electronic technology advisory committees.

Problem VII

Currently there is inadequate employment and manpower projection information for career and employment opportunities and for curriculum revision.

Facts

1. Electronic technology instructors are not receiving the state employment and manpower projection reports.

2. Many teachers and students are not aware of the availability of these reports.

Alternative Solutions

1. Each teacher make an effort to obtain the manpower projection reports from the different agencies.

2. DOE State personnel provide reports to the secondary schools.

3. Each teacher seek help from the school counselors in obtaining these reports.

4. The Career Information Center disseminate the information to the secondary schools and the community colleges.

It is Recommended:

1. That the State agencies which are concerned with employment and manpower projections work with the Career Information Center to improve the information dissemination procedures.

2. That the teacher education institutions apprise students of the availability of the employment and manpower projection reports from the various state agencies.

Implementation

The Vocational-Technical Section of the Department of Education shall request to the Director of the Career Information Center to provide employment and manpower projection reports to all vocational-technical instructors in the State of Hawaii. This request shall be submitted as soon as possible.

The Vocational-Technical Section shall make a request to the teacher education institutions that students be apprised of the availability of the employment and manpower projection reports from the various state agencies.

Problem VIII

There is a lack of in-service training opportunities available to electronic technology instructors in the State of Hawaii.

Facts

1. There are no classes tailored for electronic technology instructors during non-working hours.
2. The College of Education of the University of Hawaii does not have advance courses in electronic technology.

Alternative Solutions

1. The electronic technology instructors arrange for electronic technology workshops through their professional associations.
2. The electronic technology instructors enroll in current community college electronic technology courses.
3. The College of Education, University of Hawaii offer advanced electronic technology courses.
4. The electronic technology instructors arrange for manufacturer's workshops through industrial representatives.

It is Recommended:

1. That the College of Education of the University of Hawaii offer advanced courses in Electronic technology for the purpose of upgrading teacher competency. These courses should be numbered 400 and above and applicable for certification and reclassification.
2. That the Community College System offer courses in electronic technology for teachers in service during non-working hours.

Implementation

The Vocational Education section of the Department of Education shall conduct a survey of possible areas of interest for advance courses in electronic technology. The results of the survey shall be submitted to the State Director of Vocational Education and to the Hawaii Electronic Instructors Association by January 1975. The first electronic technology course should be offered by the summer of 1975 by the College of Education of the University of Hawaii.

The Hawaii Electronic Instructors Association shall make a request to the Provost of the community college to provide courses during non-working hours. This request shall be made by June 1974.

APPENDICES

APPENDIX I

INDUSTRIAL ARTS AND INDUSTRIAL-TECHNICAL COURSES

Special Electives, Industrial Arts

1130 Basic Electronics I

Objectives:

1. Develop basic knowledge and skills of electronics.
2. Identify and solve simple electronic problems.

Description:

An introduction to electronic principles and their applications. Includes electrical theory, vacuum tube and transistor fundamentals, and current fabrication techniques, such as printed and integrated circuits. Learning activities include demonstrations, laboratory experiments, designing, fabricating, and testing of electronic devices.

1131 Basic Electronics II

Objectives:

1. Develop basic knowledge and skills of electronic devices used for communications.
2. Diagnose, repair and service common electronic equipment.

Description:

The study of the electronic industries with emphasis on the applications of electrical energy in devices used for communications, such as radios, television, radar, and computers. Learning activities include demonstrations, laboratory experiments, designing, fabricating, and operating electronic devices.

Special Electives, Industrial-Technical

2010 Electronic Technology I

Objectives:

1. Develop basic entry level skills for electronic occupational areas.

2. Acquire and apply conceptual knowledge of electronic circuits, devices and systems.

Description:

Subject matter and laboratory experiences concerned with the design, development, modification, and testing of electronic circuits, devices and systems.

2011 Electronic Technology II

Objectives:

1. Develop basic entry level skills to a higher level of proficiency for electronic occupational areas.

2. Acquire and apply conceptual knowledge of solid state, microwave and control systems.

Description:

Advanced study of Electronic Technology. Subject matter and laboratory experiences incorporate solid state and micro miniturization devices and representative systems such as microwave and control systems. Simulated class experiences and on-the-job experiences are included.

APPENDIX II

COURSE DESCRIPTION OF COMMUNITY COLLEGE ELECTRONIC TECHNOLOGY PROGRAMS

Course Title	Course No.	Sem. Hrs.	Program*
Basic Electricity	ET 21 (121)	8	HO
Fundamentals of Electronics I	ET 21 (121)	7	HA

Course Description

Basic physics of the electron, electrical units, Ohm's law, Kirshhoff's law, batteries, resistance and conductance, magnetism and magnetic circuits, electrical power and energy, characteristics of conductors and insulators, AC circuit theory, AC and DC motors and generators and use of common measuring and metering equipment.

############################

Course Title	Course No.	Sem. Hrs.	Program*
Basic Electronics	ET 22 (122)	8	HO
Fundamentals of Electronics II	ET 22 (122)	7	HA

Course Description

This course is designed to study the vaccum tube, its characteristics and applications. All basic rectifying, switching and amplifying circuits are studied from the diode as a rectifier to the operation of the pentagrid converter. Stage by stage analysis gives the student a deeper understanding of the operation of most frequently used electronic devices. Transistor circuits up to the Cathode-emitter amplifier are included. Special emphasis is placed on the correct use of all AC test and metering equipment, including the Oscilloscope, Signal Generator, Capacometer and Multimeter.

###########################

Course Title	Course No.	Sem. Hrs.	Program*
Fabrication	ET 23 (123)	3	HA

Course Description

General shop safety, care and use of hand and power tools, soldering techniques, chassis layout and construction, fabrication materials, and repair processes and techniques used on electronic equipment and devices.

Course Title	Course No.	Sem. Hrs.	Program*
Electronic Problems	ET 24 (124)	2	HO

Course Description

This course runs concurrently with electronic theory and laboratory. Primarily used as an adjunct to these courses for the practical application of electronic theory in mathematical form. Use of the slide rule in problem solving is stressed.

############################

Course Title	Course No.	Sem. Hrs.	Program*
Electronic Drafting	ET 25 (125)	2	HO

Course Description

The language of electronics spoken with symbols and illustrated by using the correct schematic presentation and arrangement. Provides the student with experiences in design, layout, wiring and cost analysis as well as interpretation of graphs, synchrograms, and hystograms which are an important part of this course.

############################

Course Title	Course No.	Sem. Hrs.	Program*
F.C.C.	ET 26 (126)	3	HO

Course Description

The major aim of this course is to outline all theory associated with F.C.C. licensing. To condense this information into compact form to prepare the student for his F.C.C. 2nd class license. The prime objective is to cause the student to obtain his license as an added feature to his A.S. degree so furthering his knowledge of electronics and more especially, F.C.C. Rules and Regulations.

############################

Course Title	Course No.	Sem. Hrs.	Program*
Fundamentals of Electronics	ET 27 (127)	3	HO

Course Description

Must be taken concurrently with ET 27L (127L)

Study of fundamentals of electronics with emphasis on understanding basic theory of operation of vacuum tubes and transistor electronic equipment.

Course Title	Course No.	Sem. Hrs.	Program*
Fundamentals of Electronics Lab	ET 27L (ET 127L)	1	HO

Course Description

Must be taken concurrently with ET 27 (ET 127L)

Laboratory assignments covering practical applications of the basic theories studied in ET 27 (ET 127L). The laboratory experiments stress minor servicing of electronic equipment using voltage measuring, resistance readings and signal tracing techniques.

############################

Course Title	Course No.	Sem. Hrs.	Program*
Pulse Circuits	ET 41 (ET 141)	7	HO
Pulse and Logic Circuits	ET 41 (ET 141)	7	HA

Course Description

Nonsinusodial waveforms, multivibrators, blocking oscillators, shock excited oscillators, waveshaping circuits, limiters, clampers, stepcounters, and sweep generator circuits will be studied.

############################

Course Title	Course No.	Sem. Hrs.	Program*
Radar and Microwaves	ET 42 (ET 142)	5	HO

Course Description

Radar systems, radar timing systems, generation of microwaves, klystrons, magnetron waveguides, microwave components, and elementary microwave measurements will be studied.

############################

Course Title	Course No.	Sem. Hrs.	Program*
Radar and Microwave Laboratory	ET 42L (ET 142L)	3	HO

Course Description

Concurrent registration: ET 42 (ET 142)

The laboratory portion of the course provides the student with an opportunity to work with circuits and components which demonstrate the principles studied in ET 42 (ET 142L).

Course Title	Course No.	Sem. Hrs.	Program*
Electronic Circuits and Systems	ET 42 [illegible] 42)	5	HA

Course Description

Electronic circuits used in communication, navigation, microwave and radar, oceanography, industrial, medical and consumer systems.

############################

Course Title	Course No.	Sem. Hrs.	Program*
Computer Fundamentals	ET 43 (ET 143)	3	HO
Computer Electronics	ET 47 (ET 147)	7	HA

Course Description

An introduction to basic computing systems. The development and analysis of digital-analog circuitry is stressed.

############################

Course Title	Course No.	Sem. Hrs.	Program*
Instruments and Measurements	ET 44 (ET 144)	2	HO
Instruments and Measurements	ET 43 (ET 143)	5	HA

Course Description

Measurement of current, voltage, impedance, and power at direct current and low and high frequency alternating current; procedures for maintenance, calibration, and repair of selected electronics instruments according to manufacturers' specifications.

############################

Course Title	Course No.	Sem. Hrs.	Program*
Industrial Electronics	ET 45 (ET 145)	3	HO
Industrial Electronics	ET 46 (ET 146)	7	HA

Course Description

Theory and operation of gaseous and vapor filled tubes and control of thyratrons, photo tubes and photo electric devices, relays and time delay action, semi-conductors, magnetic devices, light and heat control, meter controls, welding controls, RF heating, commercial devices, computers, synchros, selsyns, servomechanism and test equipment used in industrial electronics.

* * *

Course Title	Course No.	Sem Hrs.	Program*
Introduction to Television	ET 46 (ET 146)	3	HO

Course Description

Introduction to the history, development, and fundamentals of television. Includes the basic theory and operation of the following television system, monochrome, color, portable, and recording systems and the applications of television in educational, industrial and home use.

* * *

Course Title	Course No.	Sem. Hrs.	Program*
Solid State Applications	ET 47 (ET 147)	2	HO

Course Description

Study of applications and theory of solid state devices as used in modern electronics equipment; including bipolar transistors, silicon controlled rectifiers, tunnel diodes, varactors, field effect transistors and integrated circuits.

* * *

Course Title	Course No.	Sem. Hrs.	Program*
Electronic Servicing	ET 48 (ET 148)	7	HA

Course Description

Experience in troubleshooting and repairing various consumer products such as radios, televisions, record players, tape recorders, and stereo equipment; servicing and repair techniques

[redacted] 198

Course Title	Course No.	Sem. Hrs.	Program*
Electronic Comm. Systems	ET 54 (ET 154)	3	HO
Communications	ET 45 (ET 145)	7	HA

Course Description

Study of communication systems with emphasis on all types of modulations that have evolved since the inception of simple double sideband, amplitude modulation including frequency modulation, single sideband and multiplexing systems.

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*Key: Hawaii Community College (HA)
Honolulu Community College (HO)

APPENDIX III

PROPOSED CERTIFICATE OF ACHIEVEMENT PROGRAM

Basic

Course Title	Course No.	Sem. Hrs.
Fundamentals of Electronics	ET-127	3

Course Description

Must be taken concurrently with ET-127L.

Study of fundamentals of electronics with emphasis on understanding basic theory of operation of vacuum tubes and transistor electronic equipment.

############################

Course Title	Course No.	Sem. Hrs.
Fundamentals of Electronics	ET-127L	1

Course Description

Must be taken concurrently with ET-127.

Laboratory assignments covering practical applications of the basic theories studied in ET-127.

Course Title	Course No.	Sem. Hrs.
Consumer Electronics	ET-XX	3

Course Description

Must be taken concurrently with ET-XXL.

Theory and operation of Consumer devices including Radio/TV, Audio, Small appliances and Security systems. Emphasis will be on general servicing and repair techniques. A basic comprehensive course leading to specialization in specific areas of consumer electronics.

############################

Course Title	Course No.	Sem. Hrs.
Consumer Electronics Lab	ET-XXL	5

Course Description

Must be taken concurrently with ET-XX.

Laboratory work covering practical application of devices covered in theory.

Course Title	Course No.	Sem. Hrs.
To be developed	ET-XXX	

Course Description

To be developed. Courses will cover the areas of specialization: Radio/TV; Small Appliances; Medical Equipment Maintenance; Audio Servicing: CCTV/MATV; Security Systems; Automotive Electronic Fabrication; Alpha Numeric Display Maintenance and AV equipment.

APPENDIX IV

Job Clusters For Three Levels Of Electronics Technology

Level I	D.O.T. Code
Radio Mechanic Helper	828.884
Electronic Technician Apprentice	828.281
Television Service Repairman Apprentice	720.281
Antenna Installer	823.884
Sales, Radio and Television Parts	278.358
Electronics Assembler	726.781
Level II	
Television Service Repairman	720.281
Inspector, Electronics System	722.281
Electronics Mechanic	828.281
Audio Video Repairman	729.281
Instrumentation Mechanic	003.281
Sound Technician	829.281
Radio Repairman	720.281
Control Room Technician	957.282
Transmitter Operator	957.282
Video Operator (Radio & Television)	957.282
Inspector, Systems	722.281
Level III	
Electronics Field Engineer	828.281
Communications Engineer	822.281
Electronic Engineer	003.081
Electronic Engineering Technician	003.181
Teacher, Technical	090.228
Teacher, Secondary	091.228
Instructor, Vocational	097.228
Antenna Engineer	003.081

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COLLABORATIVE ROLES AND FUNCTIONS
OF
OCCUPATIONAL EDUCATION PROGRAMS

REPORT

Submitted by Health Occupations Team

June 1974

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OBJECTIVES

Maximum articulation between and among secondary education and the community colleges should be attained when the following objectives are realized:

1. Cooperate with educational programs to promote and develop orientation and guidance programs for the health care field.
2. Provide where possible preparatory programs for advanced placement based upon demonstrated competency in order to avoid waste of individual and public resources.
3. Provide remedial and improvement programs in general education (should be an integrated endeavor of secondary and post-secondary institutions).
4. Provide progressive development in knowledge and some skills from secondary schools and community colleges.
5. Standardize course titles, objectives, and course numbers to facilitate student transfer between community colleges.
6. Develop and maintain a close communication link among students and faculty at the secondary schools and community colleges.

SECONDARY EDUCATION

Current Status

Currently there is no program for Health Occupations being implemented in the secondary schools. A course entitled "Cooperative Health Occupations Education" is included in the Department of Education's 1974-75 Authorized Courses and Code Numbers publication. (Appendix I, page 30)

Problems

1) There is no Health Occupations program being implemented in the secondary schools to fulfill student's needs.

Recommendations

1) The Health Careers Program and related courses should be electives in high schools.
    a) Health Careers Program for 10th, 11th, and 12th grades (Appendix I, page 30)

    Phase I Introduction to Health Careers

    An introductory course to orient students to the occupations in the health service industry. Designed for 10th and 11th grade students.

    Phase II Cooperative Health Occupations Education

    A training program designed to assist students interested in the health services occupations to gain practical clinical experiences.

    b) Related subjects essential to Health Careers
        1) Safety and First Aid.
        2) Math, science and language arts.

Problems	Recommendations
	3) Basic medical vocabulary (possible early admission) 4) Psychology, human development and typing
2) Teachers in general, are not adequately prepared to counsel students in certain areas of career development. Yet, every teacher needs to help in this area because of the unreal load imposed on secondary counselors. Many counselors either have too many students' disciplinary problems or are using the bulk of their time helping seniors prepare for college entrance.	2) In order to assist students to make career selection decisions, the counseling program of our schools needs to be 'overhauled.' a) An objective study by a competent outside agency needs to be made of present practices, and the system then restructured so as to mutually involve the classroom teacher and the counselors. b) Develop career guidance resource centers in secondary schools. c) Provide teachers with career information.
3) There is a lack of per-service and in-service training to develop basic techniques in career counseling for teachers and counselors.	3) Ongoing in-service training for all teachers and counselors should be inaugurated to insure continuous upgrading of our counseling program. (Career Development Continuum, a mini course; Career Development and Guidance; Vocational Guidance and Counseling)
4) There is a lack of adequate articulation between secondary schools and post-secondary institutions.	4) An overall action plan in writing for better articulation. This plan should include performance responsibilities of specific individuals representing the community colleges, secondary schools, and professional associations. The objectives spelled out in this document should be evaluated each spring. (See Appendix II, page 34 for proposal on Vocational-Technical Articulation Committee for Secondary Schools and Post-Secondary Institutions).

Problems	Recommendations
5) Jobs and job opportunities in health occupations are not now identified and publicized. Information on health occupations has to be shared with the public.	5) A public relations program needs to be developed for informing faculties, students, and the public in general about the relevance of health occupations in our community. Health occupation associations, community colleges, the University of Hawaii, and the secondary schools will all play an integral part in this program designed to educate the public.
6) Career interests of students are not identified early enough for them to take high school courses required by occupational training programs.	6) Career interest exploration should be pegged for implementation in the intermediate schools as a definite requirement of their guidance program.
7) Those students who are to enter post-secondary training in health occupations are not being enrolled in basic preparatory courses which can be classified as required for entry and success in health occupations training.	7) The community colleges will set up a uniform admission requirements for all health occupations programs. Applicants with deficiencies will be identified and strongly urged to take supplementary courses--adult education, summer school, tutoring--to make up their deficiencies. Applicants may reapply after defiiencies are made up.

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NURSING

Current Status

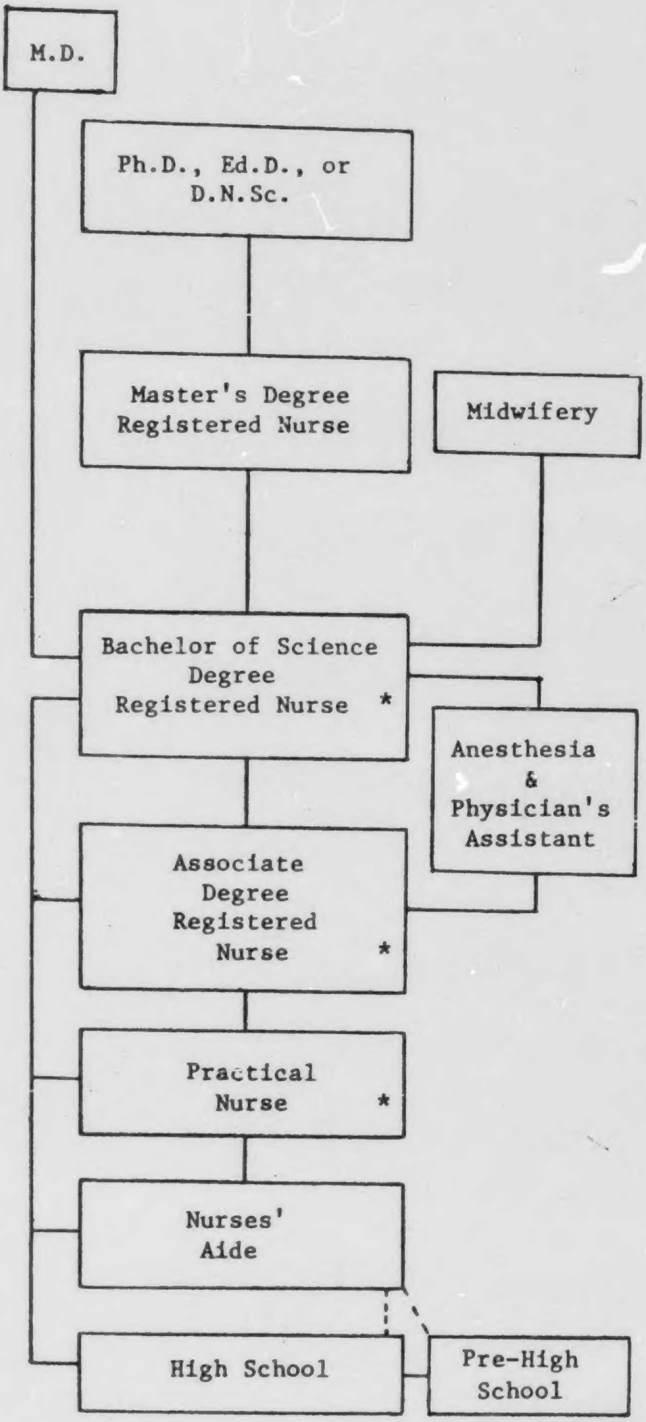
At the present time, the only nursing programs in Hawaii are located at four community colleges and at the University of Hawaii at Manoa. The end objective of all the nursing programs is the same or similar -- to prepare P.N. and R.N. program graduates to take the respective state licensing examination.

In addition a course for training nurse's aides is offered four times each academic year at Kapiolani Community College. This program prepares individuals to perform basic nursing procedures in preparation for employment in hospitals, nursing homes, private homes, and clinics. The course description is found in Appendix III, page 38. A Nurses' Aide certificate is also awarded to students in all the practical nursing programs who do not continue in the programs but have met the requirements of the aide course.

There are at present three programs in Hawaii for preparing practical nurses: at Hawaii, Kapiolani, and Kauai Community Colleges. These are one year vocational programs which prepare the student for employment in hospitals, clinics, nursing homes, and physicians' offices. The licensed practical nurse (LPN), as a nursing assistant, works under the guidance of a physician and/or registered nurse. According to assignment, the LPN applies selected nursing measures to meet the patients' basic physical needs of hygiene, comfort, safety, nutrition and elimination in a relatively stable clinical situation. Students who complete the curriculum are awarded a certificate of achievement and are eligible to apply to the Hawaii State Board of Nursing to take the examination for licensure. Curriculum and course descriptions for each of three programs are given in Appendix III, page 38.

The three programs for preparing Associate degree-level registered nurses are at Kauai and Maui Community Colleges and at the University of Hawaii at Manoa. These programs cover four academic semesters and lead to the Associate of Science degree in Nursing. Graduates are eligible to take the State Board Test Pool Examination for licensure as a registered nurse. They are prepared for staff positions in hospitals, clinics, physician's offices, and private duty. Curriculum and course descriptions are in Appendix III, page 38.

STUDENT FLOW CHART


M.D.
Ph.D., Ed.D., or D.N.Sc.
Master's Degree Registered Nurse
Midwifery
Bachelor of Science Degree Registered Nurse *
Anesthesia & Physician's Assistant
Associate Degree Registered Nurse *
Practical Nurse *
Nurses' Aide
High School
Pre-High School

EMPLOYMENT OPPORTUNITIES

Family Practice

Researcher
Nursing Teacher/Administrator
Nursing Service Administrator
Clinical Specialist

Researcher
Nursing Teacher of R.N.'s, P.N.'s or N.A.'s
Clinical Specialist
Inservice Education
Nursing Service or Educ. Administrator

Nursing Teacher of P.N.'s, or N.A.'s
Team Leader
Public Health Nurse
Staff Nurse - I.C.U. - C.C.U. etc.
Inservice Education

Team Leaders (with some experience)
Staff Nurse - I.C.U. - C.C.U. etc.

Staff Practical Nursing Under Supervision of R.N. or M.D.
I.C.U. - C.C.U. under Supervision of R.N. or M.D.

Assistant to Nurses in Hospitals and Nursing Homes

* Must take State Board of Nursing licensing examination

Problems - secondary schools	Recommendations
1) Poor reading comprehension of high school graduates. Nursing textbooks are written at the 14th-16th grade level. When students read at less than 12th grade level, it is almost impossible for them to succeed in a nursing program.	1) Stronger emphasis on reading comprehension skill from k-12. Reading ability at the 12th grade level should be an expected outcome of high school graduation.
2) Inadequate career counseling and guidance.	2) a-Orientation workshops for high school guidance counselors to acquaint them with requirements. b-Recommend that high school students interested in nursing career programs take courses in biology, chemistry, and math (algebra). c-Nursing and allied health faculty actively participate in the development of the Health Careers Program curriculum for the secondary level. We suggest a sub-committee composed of three nursing faculty, three allied health faculty, and three D.O.E. representatives, at least one of whom should be involved in the teaching of the course.

Problems - horizontal	Recommendations
1) Difficulty in communication among faculty groups because of physical separation of programs (e.g. Oahu and neighbor islands). Face-to-face communication is essential in working through problems in curriculum. Nursing faculty communicate well at every opportunity afforded them to meet. There is a U.H. Council on Nursing Education in operation but funds have not been available for meetings this year.	1) Funds need to be allotted for travel and release time to continue dialogue among nursing faculty from each nursing program. In addition, nursing should be included in the next articulation workshop.
2) Differences in course numbering. A.D. course numbers are the same in all programs, with 100 level numbers indicating first year courses and 200 level numbers indicating second year courses. In practical nursing programs the number sequences are in a similar range, but not exactly the same numbers. (e.g. The beginning practical nursing course at Hawaii Community College is numbered 21, whereas at Kapiolani and Kauai Community Colleges, it is numbered 20).	2) Work toward uniform course numbers in similar programs. The A.D. nursing courses are already numbered the same. Practical nursing faculty have agreed to attempt to resolve the course numbering problem this year.
3) Differences in sequence of nursing courses and content. There are valid reasons for differences in sequence of courses. A few reasons are: size of clinical facilities, numbers of students in a given area, and faculty beliefs about curriculum. The main advantage in having the same sequence is transferability of credits for students.	3) Continue working toward some commonalities in course and content sequence. We will be exploring various approaches to teaching in an attempt to solve this problem.

Problems	Recommendations
4) Differences in non-nursing course requirements and sequences. The associate degree programs have the same number of science credits-the difference comes in integrated courses vs. separate science courses. Practical nursing programs vary in numbers of credits of science-some have 3 credits, some have 2 credits. Integrated science courses are appropriate for nursing students at all levels. There are many difficulties in getting integrated science courses, some of which are: a) Lack of qualified faculty in some area. b) Lack of communication among science faculty particularly at U.H. Manoa (e.g. Microbiology department is located in College of Arts & Sciences while Physiology department is located in School of Medicine).	4) Work toward requiring the same number of credits in non-nursing science courses. Hawaii Community College is now planning a 3 credit science course for their PN's so that all practical nursing programs will have the same science requirements; these would be directly transferrable from one practical nursing program to another. Explore the possibility of developing integrated science courses for the Associate degree nursing programs. Funds should be alloted for consultation and/or a workshop to identify crucial content from the various sciences.
5) The lack of uniformity in admissions testing. Manoa requires the S.A.T., Kapiolani, Kauai, and Hawaii require the SCAT-IA, and Maui requires the CRT. There seems to be a lack of knowledge about correlations and equivalencies between the various tests.	5) a) use the same admission test with the same cutoff for similar programs, or b) secure information relative to equivalencies among the various tests and use these so students do not have to take different tests for different campuses.

ALLIED HEALTH

Current Status

The allied health programs at Kapiolani are unique in that they are the only programs of their kind in the state. Thus there is no horizontal articulation with other community colleges. Some of the programs are terminal; i.e. do not lead to a higher degree. Graduates of some others may go on to a program either in Hawaii or elsewhere leading to a baccalaureate degree. The Kapiolani programs involved in the articulation meetings were:

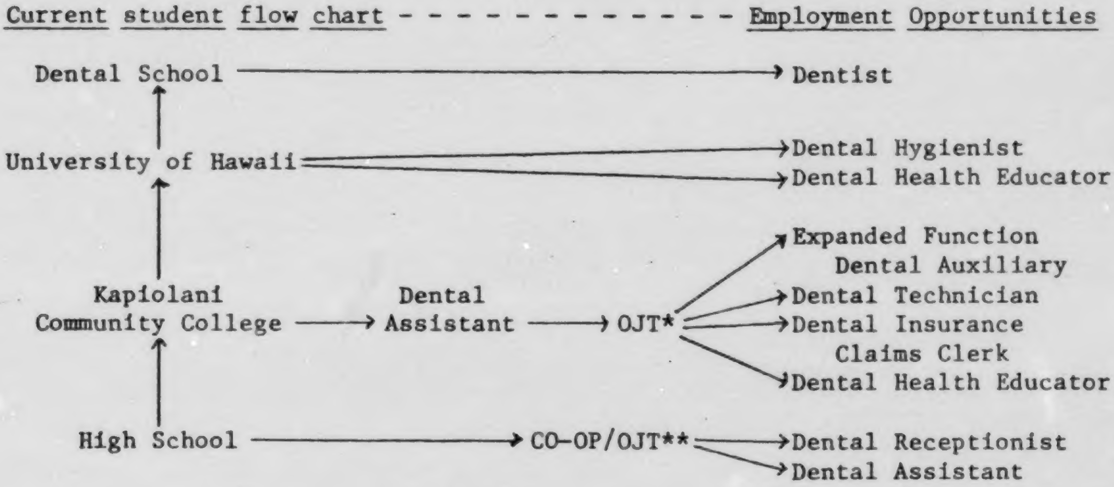
- Dental Assisting
- Medical Assisting
- Medical Laboratory Technology
- Radiologic Technology

Two other programs, Respiratory Therapy and Occupational Therapy Assisting, were not involved since instructors were not able to attend; however available program and course descriptions are included.

DENTAL ASSISTING

The curriculum is designed to prepare students for employment in private dental offices, hospital outpatient clinics, eleemosynary institutions, State and Federal agencies, and dental supply houses. Students are trained in basic dental operatory and laboratory skills, and in dental office management. Upon completion of the program, the student has fulfilled requirements for a certificate of achievement.

The one-year program is nationally accredited by the Council on Dental Education of the American Dental Association.


Current student flow chart
Employment Opportunities
Dental School
Dentist
University of Hawaii
Dental Hygienist
Dental Health Educator
Kapiolani Community College
Dental Assistant
OJT*
Expanded Function Dental Auxiliary
Dental Technician
Dental Insurance Claims Clerk
Dental Health Educator
High School
CO-OP/OJT**
Dental Receptionist
Dental Assistant

OJT* - on the job training to assume roles other than as a dental assistant

OJT** - on the job training to acquire the basic skills

CO-OP - cooperative education; part-time in school and part-time OJT

Vertical Articulation

1) Secondary Schools
    - a) Program, as such, non-existent at the present time
    - b) Job entry from high school implemented through cooperative education

2) Community Colleges and U.H. Manoa
    - a) Recommend articulation of dental assisting and dental hygiene programs
        - (1) identify common factors in course titles
        - (2) identify common areas of instruction

Horizontal Articulation

1) No comparable facilities at any other community college in the State due to the high equipment costs

2) A one-year training program restricts the degree of transferability from one college to another

Recommended high school courses:

High school Biology

First year Typing

General high school Mathematics

MEDICAL ASSISTING

The Medical Assisting program is designed to prepare students to assist the physician in his office or clinic with the many administrative or "front office" details of medical practice. Areas of training for the front office include: Reception of the patient, appointment-making, billing, record-keeping, insurance claims, medical dictation and correspondence. Areas of training for the back office include preparation of the patient for examination and treatments, performing of routine laboratory office tests, and reinforcing physician's instructions to the patients. Performing of special diagnostic tests, e.g., electrocardiograms, audiometry and eye testing are included. Laboratory classes are provided at the College with additional clinical experiences in selected clinics and physician's offices.

An Associate of Science degree is awarded upon completion of the 60 semester hours. Graduates are eligible to take the National Certification Examination. Satisfactory performance on the National Certification Examination entitles the graduate to be recognized as a Certified Medical Assistant.

Vertical Articulation

1) Secondary Schools

   a) Programs, as such, non-existent at present.

   b) Students may enroll on early admissions basis for courses required in the program and/or be given credit for appropriate courses taken in high school, e.g., typing.

2) Manoa-Baccalaureate level

   a) Students can apply to Manoa for the B.S. Nursing Program and/or the B.S. Vocational Technical Education Program to qualify for Registered Professional Nurse or Medical Assisting Instructor positions.

Horizontal Articulation

a) The Medical Assisting Program at Kapiolani Community College is the only one of its kind in Hawaii at present.

b) Students may enroll at various community colleges or private post-secondary schools and complete the equivalent of the following KCC courses:

   1. Biology 22 or 110 (Human Anatomy and Physiology) - 3-4 credits
   2. Math 21 (or higher) (Pre-Algebra) - 3 credits
   3. Typewriting 20 (Beginning Typewriting) - 3 credits
   4. Typewriting 30 (Intermediate Typewriting) - 3 credits
   5. English 26 (or higher) (Basic Writing Review) - 3 credits
   6. Typewriting 24 (Dictation and Transcription) - 2 credits
   7. Office Procedures 20 (Filing) - 1 credit
   8. Psychology 25 (or higher) (Applied Psychology) - 3 credits
   9. Speech 26 (or higher) (Speech Communications) - 3 credits

10. Humanities - 3 credits

Students may then transfer to KCC, submit a satisfactory health form, enroll in the Medical Assisting Program and complete the program in two (2) additional semesters.

c) However, it is strongly recommended that students desiring to take this route contact the instructor of the KCC Medical Assisting Program for academic advising.

Current student flow chart

Medical School - - - - - - - - - - - - - - Physician
Physician's Assistant
↑
Baccalaureate Degree
(U.H. - 4 years)
Nursing Program - - - - - - - - - - - - Registered Professional Nurse
B.S. in Vocational Technical
Education - - - - - - - - - - - - Medical Assisting Educator
↑
Associate in Science Degree
(Community College-Kapiolani)

Medical Assistant
  Clinical Assistant
    EKG Technician
    Clinic Aide
    Pharmacy Aide
  Administrative Assistant
    Administrative Medical Secretary
    Medical Secretary
    Insurance and Claims
    Medical Records Clerk
    Medical Office/Clinic Receptionist
    Appointment Center Clerk

↑
High School - - - - - - - - - - - - - - Medical Office Receptionist
(OJT/COOP)

*Licensed Practical Nurses and Nurses' Aides have been admitted to the program. Graduate Medical Assistants have also entered the LPN program as well as the ADN Nursing Program but this has not been noted in the student flow chart.

Recommended high school courses include:

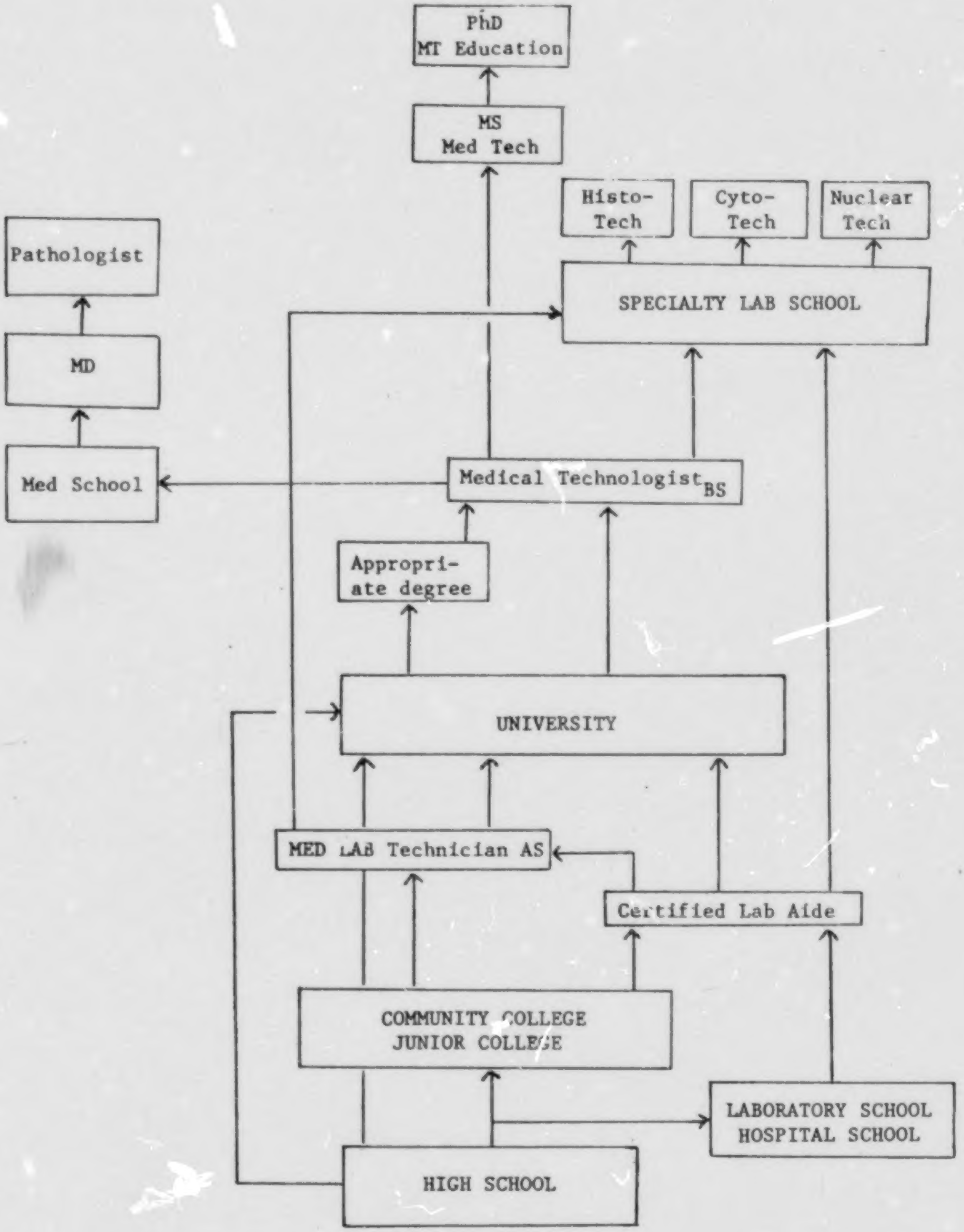
a. high school biology
b. Mathematics (pre-algebra)
c. English, grammar and composition, speech
d. 1st & 2nd year typing, 1st year bookkeeping

MEDICAL LABORATORY TECHNOLOGY PROGRAM

The curriculum is designed to prepare students to perform many laboratory procedures, to operate and care for equipment used in a clinical laboratory, and to work with special procedures under the direction of a medical technologist, physician, or biological scientist.

Graduates of the program will have met college education requirements for an Associate of Science degree, and will be eligible to take the examination given by the National Registry of the American Society of Clinical Pathologists; and upon passing, will be registered as a Medical Laboratory Technician, MLT (ASCP.)

CURRENT STUDENT FLOW CHART


PhD
MT Education
MS
Med Tech
Histo-Tech
Cyto-Tech
Nuclear Tech
Pathologist
MD
Med School
SPECIALTY LAB SCHOOL
Medical Technologist BS
Appropriate degree
UNIVERSITY
MED LAB Technician AS
Certified Lab Aide
COMMUNITY COLLEGE
JUNIOR COLLEGE
LABORATORY SCHOOL
HOSPITAL SCHOOL
HIGH SCHOOL

Vertical Articulation

Presently a Medical Technology program which leads to a Bachelor of Science in Medical Technology is offered on the Manoa Campus. Kapiolani's technician program is structured to be college transferable, and at this time, meetings are being held to determine commonalities of course content and transferability of course credit.

There are a number of Master's programs throughout the United States. U.H. Manoa has proposed a program which is offering two graduate level courses this spring.

The Doctorate level of study is relatively new in this area, and the only program known to us at this time is based at Catholic University, Washington, D.C. Completion of this program leads to a Doctorate in Medical Technology Education with emphasis on a specialty area such as chemistry, hematology or microbiology.

Strongly Recommended High School Courses

1) Human biology
2) 2 years of advanced mathematics (minimum algebra)
3) Chemistry
4) Physics

OCCUPATIONAL THERAPY ASSISTING

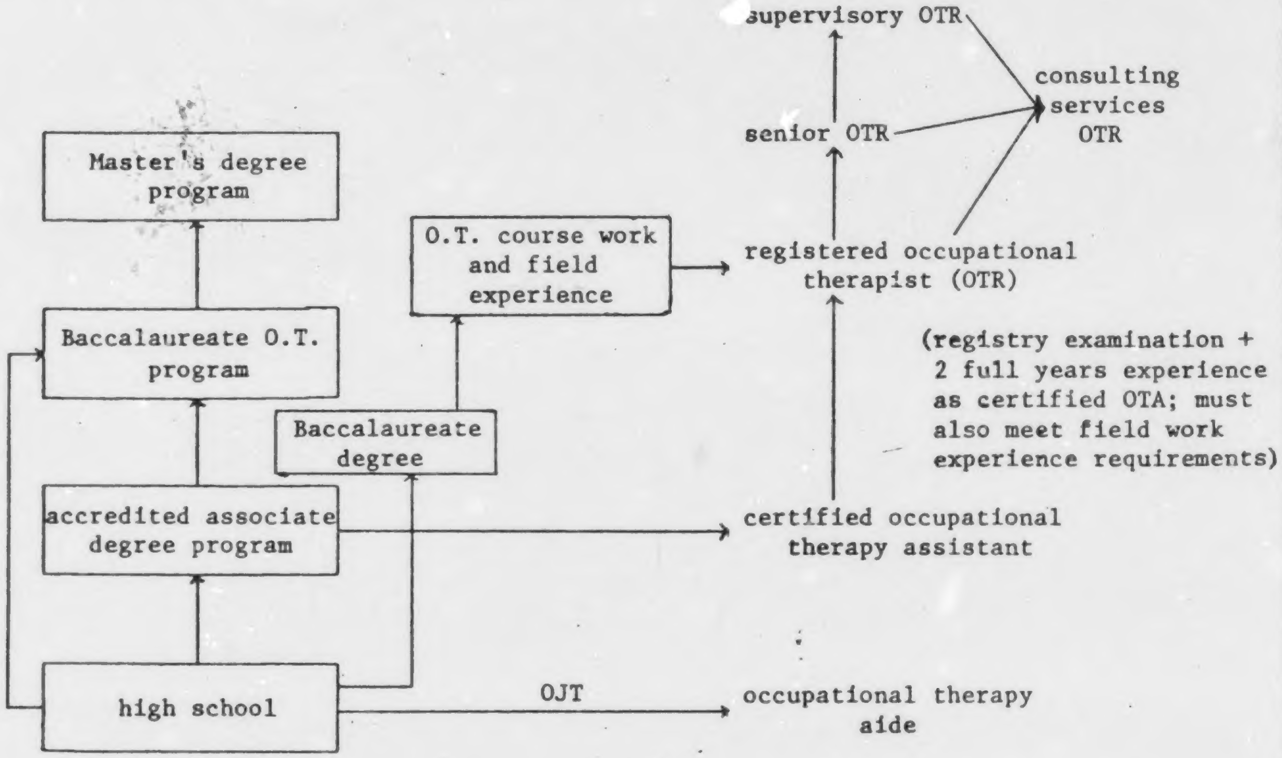
This curriculum is designed to prepare students to work under the supervision of registered occupational therapists in general activity, supportive maintenance, and acute treatment and rehabilitation programs for patients with physical and/or psycho-social dysfunction.

Satisfactory completion of the requirements for the OTA Program and the Associate in Science degree qualifies the graduate for certification with the American Occupational Therapy Association. The program is designed for a maximum transferability of credits to baccalaureate occupational therapy programs at mainland colleges.

Recommended high school courses include biological science and typing.

Student flow chart

Employment opportunities


supervisory OTR
consulting services OTR
senior OTR
Master's degree program
O.T. course work and field experience
registered occupational therapist (OTR)
Baccalaureate O.T. program
(registry examination + 2 full years experience as certified OTA; must also meet field work experience requirements)
Baccalaureate degree
accredited associate degree program
certified occupational therapy assistant
high school
OJT
occupational therapy aide

RADIOLOGIC TECHNOLOGY

This program provides medical Radiologic Technology preparation to qualify the graduate for: hospital, clinic or office work. Employment opportunities as technical representatives may be found with x-ray film and equipment companies.

Satisfactory completion of the requirement for the Associate of Science Degree permits the student to take the qualifying examination of the American Registry of Radiologic Technologists.

According to federal regulations, students under 18 years of age should no be exposed to excessive radiation. AMA standards for approved schools of Radiologic Technology require high school graduation.

Strongly recommended high school courses:

1) Algebra
2) Physics
3) Chemistry
4) Biology

Horizontal Articulation

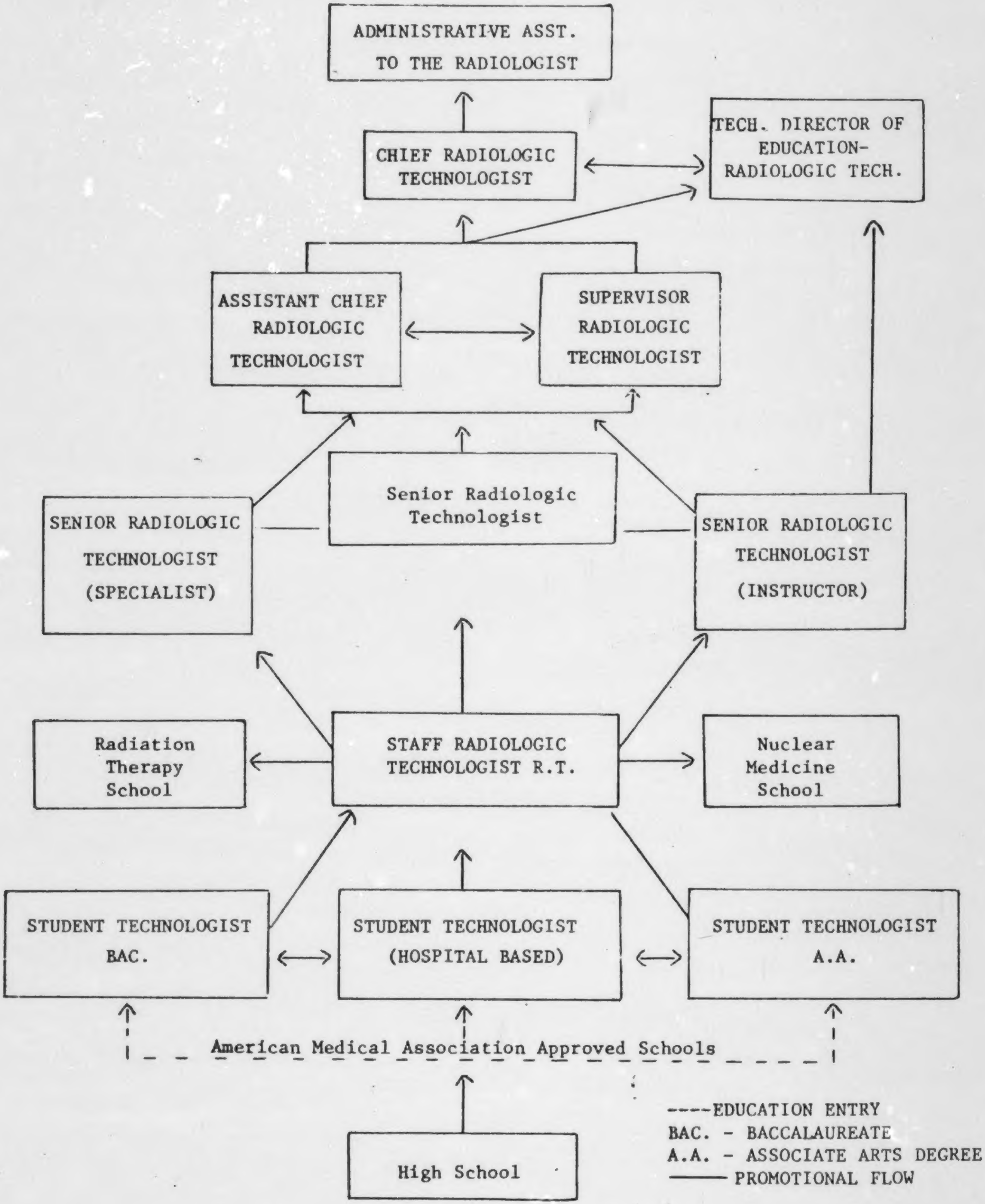
There are no other programs in the State of Hawaii. However, it would be possible for approved community college programs to offer part of the curriculum with the student transferring to KCC for the remainder of the program. Articulation with programs from other states is done if they meet standards set by the Council on Education of the American Medical Association.

Vertical Articulation

1) Recommend that any future baccalaureate program emphasize courses in management and/or education.

2) Baccalaureate program need only offer junior and senior years.

A Possible Schematic For Radiologic Technologists Based On Education And Promotional Descriptions


ADMINISTRATIVE ASST. TO THE RADIOLOGIST
CHIEF RADIOLOGIC TECHNOLOGIST
TECH. DIRECTOR OF EDUCATION-RADIOLOGIC TECH.
ASSISTANT CHIEF RADIOLOGIC TECHNOLOGIST
SUPERVISOR RADIOLOGIC TECHNOLOGIST
Senior Radiologic Technologist
SENIOR RADIOLOGIC TECHNOLOGIST (SPECIALIST)
SENIOR RADIOLOGIC TECHNOLOGIST (INSTRUCTOR)
Radiation Therapy School
STAFF RADIOLOGIC TECHNOLOGIST R.T.
Nuclear Medicine School
STUDENT TECHNOLOGIST BAC.
STUDENT TECHNOLOGIST (HOSPITAL BASED)
STUDENT TECHNOLOGIST A.A.
American Medical Association Approved Schools
High School
----EDUCATION ENTRY
BAC. - BACCALAUREATE
A.A. - ASSOCIATE ARTS DEGREE
——— PROMOTIONAL FLOW

R.T. - DESIRABLE THAT ALL ABOVE THIS LEVEL MEET THE REQUIREMENTS FOR REGISTRY BY ARRT.

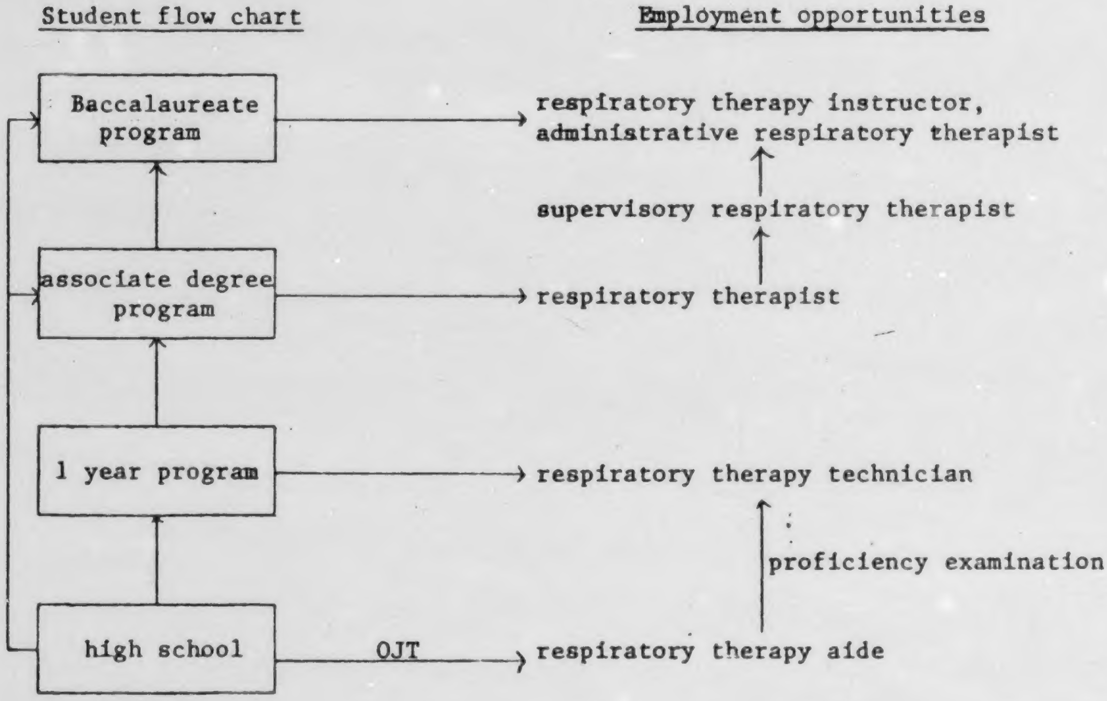
RESPIRATORY THERAPY

Respiratory Therapy is an important specialty used primarily in the treatment of lung and heart ailments; for example, in cardiac failure, asthma, pulmonary edema, emphysema, etc. Respiratory Therapy is designed to improve conditions caused by deficiencies of abnormalities associated with respiration.

The program at Kapiolani prepares graduates to take the examination to become Registered Respiratory Therapists. It is a two-year program leading to the Associate in Science degree.

There are one-year programs available on the mainland leading to a certificate of achievement as well as a few baccalaureate programs in respiratory therapy.

Recommended high school courses include biology, chemistry, physics, and algebra.


Student flow chart
Employment opportunities
Baccalaureate program
associate degree program
1 year program
high school
OJT
respiratory therapy instructor, administrative respiratory therapist
supervisory respiratory therapist
respiratory therapist
respiratory therapy technician
proficiency examination
respiratory therapy aide

Since the Allied Health programs at Kapiolani Community College are "one of a kind" in that there are currently no other such programs in the state, there are no horizontal articulation problems as such. However, several problem areas have been identified, and recommendations made.

Problems	Recommendations
1. Students have had little or no initial introduction to health occupations and have no knowledge of the scope or actual demands of preparation for and of the occupation itself.	1. Initiate health occupational information course at secondary level and at other community colleges so students can pursue fact finding in their field of choice and earn credit for doing so. Possible additions to the secondary curriculum which could earn college credit and aid in preparation for occupational education are: a - Introduction to Health Occupations b - First Aid with CPR c - Medical Vocabulary
2. Counselors and instructors at secondary and post-secondary levels are often not aware of allied health occupations or where more information can be obtained about programs available locally, what is necessary for preparation for these programs, and what exactly is involved in training and employment; hence they are not able to inform students.	2. Educate counseling and instructioanl staff by means of workshops, seminars, direct communication with the programs at the community college level. Prerequisites at high school level should be listed in descriptive brochures for each individual program.
3. Parents exert pressures on their children: to enter a particular health occupation although the child may not have the interest, or the capability, or to attend the university even though their interests may lie in the vocational education areas.	3. Educate the public, especially parents. The proposed plan for articulation committees (Appendix II, page 34) would be an excellent vehicle to carry this out.

Method of evaluation

1) performance of incoming freshmen in a longitudinal survey
2) satisfactory completion rate at the end of the school year; low attrition rate

APPENDICES

Summary of Recommendations

1. The proposed Health Careers Program for the secondary level should be developed and implemented at as many high schools as is feasible. This will help to bring about earlier and wider dissemination of information regarding health occupations to students and allow them time to take recommended courses while still in high school.

   Coordinators and instructors in nursing and allied health programs must be actively involved in the curriculum development of the program, in providing resources for the implementation, and in in-service training for the secondary teachers who will be involved in teaching it.

2. Better preparation of the student at the secondary level in communication skills as well as in the sciences and in math is also strongly recommended. In general: For one-year programs, high school preparation should include biology and pre-algebra in addition to human development and language arts. For the prospective dental or medical assistant, typing and bookkeeping are definite assets. For two-year programs, preparation should include chemistry, physics and algebra.

3. The nursing programs should continue to resolve their differences as part of the next articulation workshop. The accomplishments of this workshop have been to identify the many problem areas and differences within and among the nursing programs, and the agreement to work on a uniform course numbering system this year. These should be followed by resolution during the next workshop of differences in admissions testing, course content sequences, and non-nursing courses.

4. A mechanism for on-going articulation such as the one proposed in outline is strongly recommended. In this way improved and continuous communication among D.O.E., community college, and four-year university personnel will be brought about.

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Appendix I

Suggested
Health Careers Program
for
Secondary Schools

APPENDIX I

SUGGESTED HEALTH CAREERS PROGRAM FOR SECONDARY SCHOOLS

Phase I -- Introduction to Health Careers

Objectives:

1. Acquire knowledge of health and health care
2. Identify community health services and agencies
3. Identify job and job opportunities in the health service industry
4. Assess self in relation to job requirements for various occupations within the health field

Course Description:

An introductory course to orient students to a series of occupations in the health service industry. Emphasis is on job requirements and future job potentials in the health field. The course of study is integrated with exploratory visits to clinical laboratories.

Suggested Outline:

Module I. Orientation to the Health Care System

A. Health Care Facilities and Occupations

1) Types of agencies (organization and staff)
2) Preparation for hospital observation
3) Observation of health care facilities & occupations

B. The Student as a Potential Health Worker

1) Personal characteristics including desirable attitudes
2) Interpersonal relationships in health occupations
3) Opportunities for employment and advancement in health careers
4) Educational preparation (include observations of educational facilities)

C. Evaluation of Health Practices

1) History (folk medicine)
2) Hysteria (quackery)
3) Home remedies (basic beliefs)

D. Community and Individual Responsibility in Providing & Utilizing Medical Care

1) Composition of health team: professionals, community members, and consumers
2) Intra-team communication

E. Components and Problems of the Health Care System

1) Manpower needs
2) Facilities
3) Management (planning, utilization of resources)
4) Cost
5) Health insurance

F. The Student and his Health, Community Health and the Community

Module II. Meeting the Needs of the Patient Through the Health Care System

A. Case studies (to identify health occupations personnel; become aware of functions performed by health professionals; to identify equipment and instruments required for tasks)

B. Relationship of basic sciences to health occupations

C. First aid techniques

D. Terminology and medical abbreviations

Module III. The Health Care Community

A. The health worker and the law

B. Introduction to ethics in the healing arts

Phase II -- Cooperative Health Occupations Education

Objectives:

1. Identify employment opportunities in the occupational field of health and medical care
2. Identify job skills common to health services occupations
3. Participate in training program for health services occupations

Course Description:

A training program designed to assist students interested in the health services occupations to gain practical clinical experience. (Appropriate supervision must be available at all times during the training period to help the students work within the framework of duties and responsibilities assigned to them and to give effective care which safeguards the patient.)

Adapted from UCLA Allied Health Secondary School Pilot and Demonstration Project.

NOTE: Before the Health Career Program can be implemented at the school level, the following tasks must be undertaken to complete the program design:

1. Develop curriculum materials for the Health Careers Program
   a. Identify objectives for each unit.
   b. Plan suggested learning experiences for 10-12 grades.
   c. Include an extensive resource material listing.
   d. Include suggested working models to provide operational directions for the program.

2. Develop instructional materials appropriate to target group.

3. Set up Advisory Committee of community leaders representing a varied group of community organizations and interests.

4. Provide in-service training programs to prepare teachers for the Health Career Program.

5. Continue to articulate with post-secondary educational institutions to facilitate smooth transition of students between education levels and across health areas.

Appendix II

Proposal for
Vocational - Technical
Articulation Committees
for
Secondary Schools
and
Post - Secondary
Institutions

PROPOSAL

STATE OF HAWAII

VOCATIONAL-TECHNICAL ARTICULATION COMMITTEES FOR SECONDARY SCHOOLS AND POST SECONDARY INSTITUTIONS

I. Goal: To provide better articulation between secondary and post-secondary institutions in the State of Hawaii.

II. Composition:

The County/District Committees (9 or 11 members) are to be made up of three representatives of secondary schools, three representatives of community college, two representatives of 4-year colleges (on Hawaii and Oahu), two representatives of professional organizations, and one representative of industry. A majority or 6 of the 11 members must be instructors, and one member should be a school counselor.

The State Committee (11 members) is to be composed of the chairman of each County/District committee plus one representative each from the University of Hawaii Community College System, the Vocational Section of the Department of Education Office of Instructional Services, the office of the State Director for Vocational Education, and the Vocational Education Coordinating Council.

Special interest committees are to be appointed by and will report to the County/District committee for articulation on the local level. For statewide articulation in specific areas, special interest committees may be appointed by the State committee.

III. Responsibilities and suggested meeting schedules:

Each County/District committee in conjunction with its subcommittees will prepare, implement, monitor, and evaluate a plan for improving articulation between the secondary and post-secondary insitutions within the County/District. This plan and any related materials are to be distributed to the secondary schools and post-secondary institutions for activation.

1st meeting: Fall (September or October) orientation
Orientation, updating, appointment of special interest committees.

2nd meeting: Winter (December or January)
Check progress of current articulation plan; draft next year's plan and distribute for input.

3rd meeting: Spring (February or March)
Revise articulation plan for ensuring year and set up printing

4th meeting: Pre-summer (April or May)
Evaluate current articulation plan and distribute proposal for the next year.

Special interest committees will meet as necessary to meet the articulation goals and charges set by the respective County/District or State committee.

The State committee will meet at least once annually to review evaluation reports of on-going articulation plans, to study and make recommendations on proposals for the ensuring year, to appoint special interest committees as necessary, and to act on articulation reports and recommendations made by these committees.

IV. Articulation Plans:

These plans should be prepared in the Spring of each year and distributed to all schools concerned. The articulation plan should have specifics such as events, times, and places. Examples are: (1) "Career Days to be held in February with suggested activities and recommendations for successful Career Day programs; (2) "Visitation" or "Open House" at Community Colleges, with weeks or days best suited for the community colleges and information such as the person to contact at each school, phone numbers, possible arrangements for lunch, etc., especially if rural students are being bussed in; (3) "Vocational Technical Speakers Listings" including names, times or dates available and topics; (4) lists of Hospitals, Industries, Hotels, etc., that are willing to cooperate in arranging study-visits, providing on-the-job training, etc.

V. Recommendations:

(1) All members of the committees should be familiar with the materials developed by the EPDA institutes regarding the State plan for collaboration between the secondary and post-secondary institutions.

(2) Funds will need to be provided for the meetings of the State Committee and the statewide special interest committees. The State Director for Vocational Education should have this responsibility.

(3) The chairman of the State Committee will need to set up a mechanism for sharing of materials developed or adopted by the various County/District Committees.

(4) The objective of the committees must be aimed at providing information on vocational preparation and vocations to students, parents, teachers, all secondary schools, post-secondary institutions, and the general public.

(This plan was conceived and drafted by Laurence J. Capellas, Curriculum Specialist in Secondary Education, Hawaii School District, and modified by the Team members.)

APPENDIX III

Nurse's Aide,
Practical Nursing,
and Associate
Degree
Curricula
and
Course
Descriptions

Kapiolani Community College

NURSES AIDE TRAINING CERTIFICATE OF COMPLETION PROGRAM

NURSES AIDE TRAINING 010 6 credits
Short-term course--eight weeks FALL, SPRING

A course to teach simple nursing procedures in preparation for employment in hospitals, nursing homes, private homes, and clinics. Includes formal classes, laboratory practice, and experience in hospitals and/or nursing homes. A special certificate for students who will work in extended care facilities may be given.

HAWAII COMMUNITY COLLEGE
PRACTICAL NURSING DEPARTMENT

First Semester	Cl.Hr.	Lab.Hr.	Cr.
PRACN 20 Anatomy and Physiology	2		2
PRACN 21 Nursing Fundamentals	7		7
PRACN 21A Nursing Fundamentals Lab		24	8
	9	24	17
Second Semester			
PRACN 22 Obstetrical Nursing	3		3
PRACN 22A Obstetrical Nursing Lab		9	3
PRACN 23 Pediatric Nursing	2		2
PRACN 23A Pediatric Nursing Lab		6	2
PRACN 24 Psychiatric Nursing	3		3
PRACN 24A Psychiatric Nursing Lab		9	3
	8	24	16
Summer Session			
PRACN 25 Advanced Nursing	8		3
PRACN 25A Advanced Nursing Lab		24	3
	8	24	6
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Course Descriptions:

PRACN 20 Anatomy and Physiology (2 cl. hrs., 2 cr.)

Anatomy and physiology of body systems: course content is closely correlated with the course in fundamentals of practical nursing to facilitate understanding of safe and effective nursing care.

PRACN 21 Nursing Fundamentals (7 cl. hrs., 7 cr.)

Orientation to the history of nursing: the role and function of practical nursing, the health problems, health facilities, and the basic needs of all individuals; personality development and normal nutrition, nursing the adult patient, care and simple nursing needs; fundamentals of medical-surgical nursing and drug administration.

PRACN 21A Nursing Fundamentals Laboratory (24 lab hrs., 8 cr.)

The laboratory and clinical experiences are closely correlated: beginning skills in observation, recording, patient care and oral drug administration.

(Hawaii Community College)

PRACN 22 Obstetrical Nursing (3 cl. hrs., 3 cr.)

Introduction to the needs and care of normal obstetrical patients and normal newborn infants: common discomforts and major problems of pregnancy and disorders of the neonate.

PRACN 22A Obstetrics Nursing Lab (9 lab hrs., 3 cr.)

Fundamental physical, emotional and community health concepts will be applied to the nursing care of the family throughout the normal process of pregnancy and childbirth and to the new-born infant and his mother. Selected concepts of nutrition and pharmacology will be integrated. Laboratory experiences will be selected to help the student make application of theoretical concepts.

PRACN 23 Pediatric Nursing (2 cl. hrs., 2 cr.)

Principles of normal and abnormal child growth and development basic nursing principles and skills of child care; learning experiences structured with patients; diet and drug therapy are individualized for selected patients.

PRACN 23A Pediatric Nursing Laboratory (6 lab hrs., 2 cr.)

Laboratory experiences will be selected to help the students make application of theoretical concepts: observations in day care centers.

PRACN 24 Psychiatric Nursing (3 cl. hrs., 3 cr.)

Principles of psychiatric nursing: the different types of mental illness and the needs expressed through a typical behavior; the different methods of psychiatric therapy and the significant role that the nurse plays in the needs of the mentally ill.

PRACN 24A Psychiatric Nursing Laboratory (9 lab hrs., 3 cr.)

Mental health principles and concepts and their application to selected patients: therapeutic: rehabilitative: and preventive health measures.

PRACN 25 Advanced Nursing Laboratory (8 cl. hrs., 3 cr.)
Summer Session (Six weeks)

Experience in the identification and care of patients with malfunctioning body systems: signs and symptoms of specific disorders with resultant special needs and care.

PRACN 25A Advanced Nursing (24 lab hrs., 3 cr.)
Summer Session (Six weeks)

Clinical experiences provide total patient care problems: emphasis on experience of a practicing practical nurse; opportunities provided for organization and planning.

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KAPIOLANI COMMUNITY COLLEGE
PRACTICAL NURSING CURRICULUM

Requirements	Semester Hours
FALL:	
PRACN 20, Basic Nursing Care	10
PRACN 21, Directed Study	1
BIOL 22, Human Anatomy and Physiology	3
	14
SPRING:	
PRACN 22, Physical & Mental Illness	11
PRACN 23, Directed Study	1
PSY 25, Applied Psychology	3
	15
SUMMER:	
PRACN 24, Maternal & Child Nursing	6
PRACN 25, Personal & Vocational Relationships	1
	7
TOTAL	

Course Descriptions:

PRACN 20 Basic Nursing Care (10)
5 hours lecture, 15 hours lab per week
Pre-requisite: Admission to Practical Nursing Program

A course designed to teach the Practical Nursing student basic nursing principles and skills; concepts related to nutrition, community health, rehabilitation, mental health, pharmacology, and the nurse/patient relation are integrated throughout the course.

PRACN 21 Directed Study (1)
3 hours per week
Must be taken concurrent with PRACN 20

A course designed to reinforce, through audio-visual materials, and laboratory practice, those basic nursing principles and skills introduced in PRACN 20.

PRACN 22 Physical and Mental Illness (11) SPRING
5 hours lecture, 18 hours clinical per week
Pre-requisites: PRACN 20, 21, and Anatomy 22

Course designed to teach the student principles and skills necessary for the care of medical, surgical, and mentally ill patients, and with continued emphasis on pharmacology as it relates to the care of these patients. Major concepts introduced in PRACN 20 will continue to be an integral part of the course.

PRACN 23 Directed Study (1) SPRING
3 hours per week
Must be taken concurrent with PRACN 22

A course designed to reinforce, through audio-visual materials and laboratory practice, those nursing principles and skills introduced in PRACN 22.

PRACN 24 Maternal and Child Nursing (6) SUMMER
6 hours lecture, 18 hours clinical per week for 8 weeks
to begin immediately following the Spring semester.
Pre-requisites: PRACN 20, 21, 22, 23, Anatomy 22, and Psychology 25

A course designed to teach the student principles and skills necessary for the nursing care of mothers, newborns, and children. Previously identified concepts will be utilized. Emphasis will be on the normal family unit.

PRACN 25 Personal & Vocational Relationships
2 hours lecture per week, concurrent with PRACN 24
Pre-requisites: Same as for PRACN 24

A course designed for discussion of ethical relationships, trends and vocational relationships for the practical nurse.

PSY 25 Applied Psychology (3)
3 hours per week

A study of psychological concepts and human behavior. Emphasis on growth and development.

BIOL 22 Human Anatomy and Physiology (3)
3 hours per week

The structure and function of the human body, including reproduction. A non-laboratory course designed for students with no previous work in chemistry or physics.

KAUAI COMMUNITY COLLEGE
PRACTICAL NURSING CURRICULM

Requirements:		Credits
FALL		
PRACN 020	Nursing I	12
BIOL 024	Human Biology	3
		15
SPRING		
PRACN 021	Nursing II	12
PRACN 022	Nursing III	3
		15
SUMMER		
PRACN 023	Nursing IV	5

Course Descriptions:

PRACN 020 Nursing I (12)
Class hours: 6 lecture, 18 laboratory

Primary focus on the basic physiological needs of man throughout the life continuum. Emphasis on the performance of basic nursing skills to meet man's basic needs in a laboratory and clinical setting.

PRACN 021 Nursing II
Class hours: 6 lecture, 18 laboratory

An integrated course in medical-surgical, pediatric and psychiatric nursing. Primary focus on the understanding of common physiological and psychological conditions of patients and performance of nursing care skills and theraputic techniques to meet the patients needs. Laboratory experiences in a variety of settings.

PRACN 022 Nursing III (3)

Development of nursing, the role, commitments, and responsibilities of the practical nurse.

PRACN 023 Nursing IV (5)
Class hours: 5 lecture, 32 laboratory

Theory and experience in obstetrical and medical-surgical nursing. Emphasis on the student's role as a member of the nursing team, participation in the total nursing process, and proficiency in nursing skills.

BIOL 024 Human Biology (3)

Introduction to the fundamental facts and principles of body structure and function. Selected facts and principles from physics, chemistry, and microbiology which pertain to the functioning of the human organism.

KAUAI COMMUNITY COLLEGE

NURSING
ASSOCIATE OF SCIENCE DEGREE

First Year Curriculum

Fall Semester			Credits	Hours per Week Lec	Lab
SCI	100	Science I	4	3	2
PSY	100	Survey of Psychology	3	3	
PSY	230	Survey of Human Dev	3	3	
NURS	153	Nursing I	6	3	12
			16	12	14

Spring Semester

SCI	101	Science II	4	3	2
Social Science Elective			3	3	
ENG	101	Freshman Composition	3	3	
NURS	154	Nursing II	7	3	12
			17	12	14

Second Year Curriculum

Fall Semester

		Elective	3	3	
SP	210	Intercultural Communication	4	3	2
NURS	255	Nursing III	9	4	15
			16	10	17

Spring Semester

PSY	250	Behavior Interpretation or Elective	3	3	
		Elective	3	3	
NURS	256	Nursing IV	8	3	
NURS	258	Nursing V	2	2	15
			16	11	15

COURSE DESCRIPTIONS

NURS 153 Nursing I (6) 3 hours lecture and 9 hours laboratory per week

Primary focus of this course is upon the nursing process, man's basic needs, and basic nursing principles and skills to meet man's needs. Opportunities are provided to practice skills in the nursing laboratory and health agencies in the community.

NURS 154 Nursing II (6) 3 hours lecture and 9 hours laboratory per week

Study of childbearing and childrearing using a family centered, developmental approach with the nursing process. The major focus is upon the normal aspects of maternal and child health; however, consideration is given to complications that may occur during the maternity cycle as well as deviations from normal that may occur in the newborn infant. Opportunities are provided to care for patients in obstetric units, prenatal and post-natal clinics, pediatric clinics, and to follow a family through the childbearing experience.

Study of mental health and illness with emphasis on psychiatric problems using a behavioral approach. Focus is on the needs, feelings, and behaviors of students and patients. Clinical experience includes working with hospitalized and non-hospitalized mentally ill patients.

NURS 255 Nursing III (10) 5 hours lecture and 15 hours laboratory per week

Study of the major physical and emotional problems of ill children and adults using the needs approach and the nursing process. Opportunities are provided to care for medical, surgical and pediatric patients in a variety of clinical settings.

NURS 256 Nursing IV (8) 3 hours lecture and 15 hours laboratory per week

Continuation of study of the major physical and emotional problems of ill children and adults using the needs approach and the nursing process. Opportunities are provided to care for medical, surgical and pediatric patients in a variety of clinical settings.

NURS 258 Nursing V (2) 2 hours lecture per week

Study of the development of nursing, future trends in nursing and the role of the nursing and health team.

SCI 100/101 Science I and Science II (4-4) year

A two semester integrated basic science course which includes concepts and principles from physics, inorganic chemistry, organic chemistry, microbiology, anatomy, physiology and pathophysiology. Emphasis is on application of science principles to the understanding of human biology.

PSY 100 Survey of Psychology (3)

A general survey of concepts and ideas in psychology. The development of the individual, individual differences, measurement of capacities and abilities, and the psychological basis of behavior which includes emotions, perception, learning, memory, thinking, defense mechanisms, and motivation.

PSY 230 Survey of Human Development (3)

Principles of development from conception to death. Focus is on the interrelationship of physical, cognitive, and social-emotional aspects of the individual.

SP 199 Intercultural Communication (4)

An experimental interdisciplinary course dealing with cultural differences and the way these differences disrupt communication between people of varying cultural backgrounds. An endeavor to broach cultural barriers and build a new cross-cultural framework of ideas, attitudes and skills.

ENG 101 Freshman Composition (3)

Emphasizes clear thinking, critical analysis, good organization and effective self-expression in the writing of expository papers and essays.

PSY 250 Behavior Interpretation (3)

This course focuses on concepts of behavioral sciences applicable to understanding the behavior of those around you: 1) your staff; 2) your patients; 3) your co-workers; 4) your classmates; 5) your boss; 6) your friends, etc.

SCHOOL OF NURSING
UNIVERSITY OF HAWAII (MANOA)
DEPARTMENT OF ASSOCIATE DEGREE NURSING

FIRST YEAR

First Semester	Credits	Second Semester	Credits
NURS 153	5	NURS 154	8
Human Development 231	3	Human Development 232	3
Microbiology 130 (lab.)	3	Psychology 100	3
Microbiology 130 (lab.)	1	Basic Soc. or Anth. 200	3
Physiology 101	4		
	16		17

SECOND YEAR

Third Semester		Fourth Semester	
NURS 255	8	NURS 256	8
Basic English	3	NURS 258	2
Elective	3	Elective	3
Elective	2	Elective	3
	16		16

Course Descriptions:

NURS 153 Nursing I (5) I

Study of basic principles of nursing and fundamental skills in patient care. Opportunities are provided to practice skills in the School of Nursing laboratory and other health agencies in the community. 3 hours lecture and 8 hours laboratory per week.

NURS 154 Nursing II (8) II

Study of child-bearing and child-rearing periods of man's life cycle using the family-centered approach. Opportunities are provided to care for patients in a variety of maternal-child health facilities. 4 hours lecture and 12 hours laboratory per week. Pre: 153.

NURS 255-256 Nursing III and Nursing IV (8-8) yr.

Study of the major physical and mental health problems of adults using the needs approach. Opportunities are provided to care for patients in medical surgical and psychiatric facilities.
255: 4 hours lecture and 12 hours laboratory per week.
256: 3 hours lecture and 15 hours laboratory per week.

NURS 258 Nursing V (2) II

Study of the development of nursing and future trends in nursing, including socio-economic influences on nursing. To be taken concurrently with 256. 2 hours lecture per week.

PHYSL 101 Introduction to Human Physiology (4) I (4L)

Review of human physiology intended primarily for associate degree candidates in the School of Nursing.

MICRO 130 General Microbiology (3) I, II

Fundamentals of microbiology. The role of microorganisms and how they affect man and his possessions. Discussion groups optional. Not open to those who have credit in 251. Multiple sections, each with a different emphasis, as follows: (1) Survey of microbiology with emphasis on broad aspects of biochemistry, genetics, physiology, exobiology and origin of life. (2) Medical and public health aspects, bacterial and viral diseases, epidemiology. (3) Ecology with emphasis on the microbiology of soils and water: Environment and pollution: industrial microbiology.

MICRO 130L Microbiology Laboratory (1) I, II (1Lb)

Primarily for students in nursing and dental hygiene. Pre: credit or registration in 130: Chem 113-115.

HD 231 Introduction to Human Development (3) I, II

Principles of development from conception to puberty. Focus on the interrelation of physical, cognitive, and social-emotional aspects of the individual during this period.

HD 232 Introduction to Human Development (3) I, II

Principles of development from puberty to death. Focus on the interrelation of physical, cognitive, and social-emotional aspects of the individual during this period. 231 and 232 need not be taken in sequence.

ANTH 100 Cultural Anthropology (3) I, II

Nature of culture: Introduction to basic concepts for analyzing cultural behavior; patterning, integration, and dynamics of culture and the individual.

PSY 100 Survey of Psychology (3) I, II

Principles of human behavior, individual differences, motivation, emotion, perception, learning.

SOC 100 Survey of General Sociology (3) I, II

Survey of basic social relationships, social structures and processes.

One course from the sequence 100-170:

ENG 100 Expository Writing: Four Major Forms (3) I, II

Practice in representative forms of expository writing: descriptive and narrative exposition, autobiographic writing, interpretations of completed events and presentation of arguments on social or cultural issues, together with readings in professional writing in each form.

ENG 110 Narrative and Descriptive Exposition (3) I, II

Intensive course in the writing of exposition in which description and narration play a major role. All assignments in non-fiction.

ENG 120 Exposition and Autobiography (3) I, II

Writing of essays in which the student records, examines, accounts for, and interprets noteworthy events in his own life.

ENG 130 Problem-Solving and Argument of Contemporary Issue (3) I, II

Study of elements involved in solving of problems and resolution of issues in a controversy, together with writing of essays in which students identify problems and argue in support of courses action that should be taken to solve those problems.

ENG 140 The Uses of Language (3) I, II

Requires frequent written commentaries on language in action. Papers based on readings in prose writing (book-length works of nonfiction, essays, reports and editorials in newspapers, articles and advertisements in periodicals) and observation of oral discourse (public speeches, television reports, radio and television advertisements, etc.). Also includes exercises in the creation of different rhetorical effects through language.

ENG 150 Exposition and the Study of the Past (3) I, II

Writing of essays focusing on analysis and comparison of ideas and issues raised by primary and secondary sources in Western cultural and intellectual development.

ENG 160 Studies in a Major Writer of Exposition or Argument (3) I, II

Writing of analyses, interpretations, and evaluations of a work or group of works by a single writer, to help students develop firm grasp of the author's work and of ways of analyzing major works of exposition.

ENG 170 Language and the Visual Media (3) I, II

Writing of essays analyzing visual media, with particular concentration on the role of language in visual media, such as films, television, and advertising.

MAUI COMMUNITY COLLEGE
ASSOCIATE IN SCIENCE DEGREE (AD) NURSING PROGRAM

Requirement for admission to the Nursing Program: (1) Evidence of graduation from an accredited high school, or average standard score of 45 or better with no score less than 35 on any of the five sections on the High School General Educational Development (G.E.D.) Test; (2) Evidence of vocabulary and reading comprehension at the 13th grade level; (3) A grade of C or better in a high school or college level math course, or a passing score on Maui Community College Math Placement Test (MPT) or any similar standardized test; (4) Evidence of personal health; (5) Personal interview with the Nursing Faculty; (6) Completed applications must be received by March 15 for consideration for the following fall; (7) While not a definite requirement it is recommended that applicants complete at least one high school science course (biology, human development, physics, chemistry), and one speech course.

First Year

First Semester	Credits	Second Semester	Credits
BIO 130 Anat. & Phys.	4	BIO 131 Micro.	4
NURS 153 Fundamentals of Nsg.	8	NURS 154 Fam. Nsg.	8
PSY 120 Developmental Psy.	3	PSY 110 Psych of Adj.	3
	15		15

Second Year

Third Semester	Credits	Fourth Semester	Credits
NURS 255 Gen. Nsg. I	8	NURS 256 Gen. Nsg. II	8
SOC 100 Sociology	3	Eng or Speech Comm. Elective	3
ENG 100 Expos. Wrtg.	3	Electives	6
Humanities elective	3		
	17		17

Course Descriptions:

NURS 153 Fundamentals of Nursing (8)

Prerequisite: Admission to the Nursing Program
Introduction to concepts, skills and attitudes basic to nursing. Major content areas include normal prenatal care, growth and development, developmental tasks for all ages and beginning communication. (5 hrs. focused discussion, 9 hrs. lab)

NURS 154 Family Nursing (8)

Prerequisite: NURS 153 with a grade of C or better
Beginning the care of patients of all ages who are in physical and mental crises including labor and delivery and postpartum care; emphasis on practice in problem solving. (4 hrs. focused discussion, 12 hrs. lab)

NURS 255 General Nursing I (8)

Prerequisite: NURS 154 with a grade of C or better
Continuing the care of patients of all ages who are physically or mentally ill including complications of pregnancy; emphasis on decision making. (4 hrs. focused discussion, 12 hrs. lab)

NURS 256 General Nursing II (8)

Prerequisite: NURS 255 with a grade of C or better
Focuses on transition from student to graduate; historical, legal and ethical components of nursing practice, community health; emphasis on patients requiring more complex care and leadership skills. (4 hrs. focused discussion, 12 hrs. lab)

BIOL 130 Introduction to Human Anatomy and Physiology (4)

Review of human anatomy and physiology. (3 hrs. lect., 1 hr. film, 2 hrs. lab)

PSY 120 Developmental Psychology (3)

Introduction to developmental psychology covering infancy to adulthood. Principles of developmental growth patterns. (3 hrs. lect.)

BIOL 131 Microbiology (4)

Fundamentals of microbiology. The role of microorganisms and how they affect man and his possessions. Emphasis is on medical and public health aspects, bacterial and viral diseases, epidemiology. (3 hrs. lect., 2 - 1½ hr. labs)

PSY 110 Psychology of Adjustment (3)

Understanding and improving adjustment. Needs, frustrations, conflicts, anxiety, patterns of adjustment. Concepts of mental health. (3 hrs. lect.) Note: not open to majors.

SOC 100 Survey of General Sociology (3)

Basic social relationships, norms, social structures and processes affecting social change. (3 hrs. lect.)

ENG 100 Expository Writing (3)

Prerequisite: Satisfactory score on the English Placement examination, or consent of instructor.

Discovery and applying the concepts of purpose, audience, and tone in writing. Emphasis on interpreting and evaluating essays; writing expository pieces, interpretive reflections, and essays arguing for action or solutions to problems. (3 hrs. lect. lab)

*Journalism 100 may be taken in place of English 100 to satisfy the English composition requirement.

APPENDIX IV

Curriculum and Course Descriptions for Allied Health Programs at Kapiolani Community College

DENTAL ASSISTING CURRICULUM

Fall:

DENT 24, Introduction to Dental Assisting	1
DENT 25, Dental Administration	1
DENT 26, Bio-Dental Sciences	3
DENT 27, Dental Materials	1
DENT 27L, Dental Materials Lab	1
DENT 28, Dental Radiography	2
DENT 29, Dental Operatory Procedures I	1
DENT 30, Clinical Rotations I	1
Mathematics	3
	14

Spring:

DENT 35, Dental Operatory Procedures II	1
DENT 36, Dental Laboratory Procedures	1
DENT 36L, Dental Laboratory Procedures Lab	1
DENT 37, Clinical Rotations II	5
Health Foundations 103, Standard First Aid and Personal Safety	1
Health Foundations 110, Basic Nutrition	1
Speech	3
Electives	3
	16
TOTAL	30

Course Descriptions:

Fall

DENT 24 Introduction to Dental Assisting (1)

An orientation to the dental profession including dental assisting; the growth of the dental health team and areas of employment opportunities for a trained dental assistant. First four weeks of Fall semester.

DENT 25 Dental Administration (1)

Identification and application of some of the factors that influence human behavior; maintenance of all general records; knowledge of and utilization of acceptable banking procedures; maintenance of an accurate inventory control; identification and completion of various dental insurance forms. Second four weeks of Fall semester.

DENT 26 Bio-Dental Sciences (3)

General anatomy; head and face anatomy; growth and development of teeth and their supporting structures; basic and general sciences related to dentistry; preventive dentistry and oral hygiene.

DENT 27 Dental Materials (1)

The physical and chemical properties of dental materials.

DENT 27L Dental Materials Lab (1)

Identification and manipulation of dental materials according to the manufacturers' directions.

DENT 28 Dental Radiography (2)

Basic knowledge in the application of radiography in the dental office.

DENT 29 Dental Operatory Procedures I (1)

Basic chairside assisting techniques. Tray setups for general dentistry.

DENT 30 Clinical Rotations I (1)

Application of acquired knowledge and skills in actual dental situations at various affiliated agencies; under supervision at all times. Last eight weeks of Fall semester.

Spring:

DENT 35 Dental Operatory Procedures II (1)

Chairside assisting in specialty practices; development of a greater degree of competency in the performance of an assistant's duties.

DENT 36 Dental Laboratory Procedures (1)

Various techniques and materials used in the fabrication of dental prostheses.

DENT 36L Dental Laboratory Procedures Lab (1)

Application of various techniques and manipulation of various materials used in the fabrication of dental prostheses.

DENT 37 Clinical Rotations II (5)

Application of acquired knowledge and skills in actual dental situations at various affiliated agencies; under supervision at all times.

MEDICAL LABORATORY TECHNOLOGY PROGRAM

First Year

Fall:

ENG	100	Expository Writing	3
CHEM	113	General Chemistry	3
CHEM	113L	General Chemistry Lab	1
MATH	120	College Algebra (minimum)	3
MLT	100	Orientation to the Clinical Laboratory	2
MLT	100L	Introduction to Laboratory Methods	2
BIOL	110	Human Anatomy & Physiology	4
			18 Cr. Hrs.

Spring:

CHEM	114	General Chemistry	3
CHEM	114L	General Chemistry Lab	1
MLT	102	Clinical Laboratory Theory	4
MLT	102L	Clinical Laboratory Techniques	2
MLT	104	Immunology	4
*Humanities elective			3
			17 Cr. Hrs.

Summer:

MLT	140	Clinical Laboratory Rotation I	8
			8 Cr. Hrs.

Second Year

Fall:

SP	125	Effective Oral Communication	3
*Social Science Elective			3
MLT	201	Clinical Chemistry	4
MLT	201L	Clinical Chemistry Laboratory	2
MLT	204	Clinical Microbiology	3
MLT	204L	Clinical Microbiology Laboratory	3
			18 Cr. Hrs.

Spring:

MLT	241	Clinical Laboratory Rotation II	13
			13 Cr. Hrs.

*Must be courses numbered 100 or above

Course Descriptions:

MLT 100 Orientation to the Clinical Laboratory

Clinical laboratory organization. Introduction to hematology, urinalysis, clinical chemistry, microbiology and immunohematology; routine testing in all laboratory areas.

MLT 100L Introduction to Laboratory Methods

Introduction to basic clinical laboratory instrumentation. Emphasis on working with dilutions, laboratory statistics, and basic laboratory techniques, including specimen collection.

MLT 102 Clinical Laboratory Theory

Theoretical basis for coagulation studies; clinical aspects of hematology and urinalysis.

MLT 103 Immunology

Principles of immunology with emphasis on immunohematology. Lab to include practical applications of principles.

MLT 102L Clinical Laboratory Techniques

Basic techniques in coagulation studies and calibration curves. Intensive practice in doing complete blood counts, other hematology analyses, and urine testing.

MLT 140 Clinical Laboratory Rotation

Clinical rotation in community hospital and private medical laboratories.

MLT 201 Clincal Chemistry Laboratory

Clinical aspects of clinical chemistry analyses. Principles of routine clinical chemistry tests; introduction to special tests, automated procedures.

MLT 201L Clinical Chemistry Laboratory

Variety of routine chemistry testing to establish techniques using manual and automated methods.

MLT 204 Clinical Microbiology

Microbial and parasitic diseases of man; characteristics of bacterial pathogens, introductory parasitology.

MLT 204L Clinical Microbiology Laboratory

Basic laboratory techniques of isolation and identification in medical microbiology.

MLT 241 Clinical Rotation II

Clinical Experience in affiliated community laboratories.

MEDICAL ASSISTING PROGRAM

First Year

Fall:

Health Foundations			Cr. Hr.
HF	104	Intro. to Med Sc. & Micro	2
HF	105	Intro. to Med Term.	1
HF	110	Basic Nutrition	1
MEDAS	30	Clinical Assisting I (Back Off)	2
BIOL	22	Human Anat. & Physio.	3
MATH	21	Pre-Algebra	3
*Typing	20B, C, D,	Beginning Typewriting	3
			15

Spring:

Health Foundations			
HF	103	First Aid	1
HF	107	Math for Health Practitioner	1
HF	108	Drug Therapy	1
HF	109	Administration of Drugs	1
MEDAS	31	Medical Law, Ethics, Econ.	3
ENG	26V	Basic Writing Review	3
Typing	24	Dictation & Transcription	2
Typing	30B, C, D,	Intermediate Typewriting	3
OP	.	Filing	1
			16

Second Year

Fall:

MEDAS	32	Clinical Lab Proc. I	4
MEDAS	41	Med. Office Proc.	3
PSY	25	Applied Psychology	3
Speech	26	Speech Communication	3
		Humanities	3
			16

Spring:

MEDAS	40	Seminar - Clinical Assistant II	4
MEDAS	43	Externship	6
		Electives	3
			12

*Typing 20B, C, D, pre-requisite for advanced typing and office procedures (If Typing 20B, C, D is waived, substitute 3 credits of electives).

60 credits of the above required to meet the A. S. Degree requirements. Students may elect to attend summer school to meet the liberal arts and elective requirements. (3-6 credits)

Course Descriptions:

MEDAS 30 Clinical Assisting I (Back Office) (2) Fall
4 hours per week

Basic principles, practices and procedures of clinical medical assisting. Lecture/discussions and laboratory practices are provided.

MEDAS 31 Medical Law, Ethics and Economics (3) Spring
3 hours per week. Prerequisite: Consent of instructor

The evolution of medicine; the ethical and legal relationship of physician and patient; the types of medical practice and care available; and the role, commitment and responsibilities of the medical assistant.

MEDAS 32 Clinical Laboratory Procedures I (4) Fall
3 hours lecture, 3 hours lab per week

An introduction to basic diagnostic concepts and procedures commonly used in physician's offices or clinics to evaluate the health status of patients. Emphasis is on the role of the medical assistant.

MEDAS 40 Clinical Assisting II (Seminar) (4) Spring
4 hours per week

An advanced seminar course, taken concurrently with MEDAS 43, to facilitate the transfer of Medical Assisting principles, concepts and practice, Individualized and group sessions dealing with problem areas encountered during Externship. Continued development of knowledge and skills for entry-level proficiency.

MEDAS 41 Medical Office Procedures (3) Fall
3 hours per week. Pre-requisite: Consent of instructor

Fundamentals of medical office practices and procedures. Lecture discussion and clinical experiences are provided.

MEDAS 43 Externship (6) Spring
18 hours lab per week

An advanced Medical Assisting course conducted in various affiliated agencies (physician's offices or ambulatory care clinics) to provide supervised clinical practice in the application of acquired knowledge and skills with major emphasis in the "front" and "back" office areas.

OCCUPATIONAL THERAPY ASSISTING PROGRAM

First Year

Fall:

			Cr. Hr.
ART	100	Applied Design: Crafts	3
OTA	100	Orientation to Occupational Therapy	4
*OTA	100L	Orientation to Occupational Therapy Lab	1
HF	106	Introduction to Human Growth and Development	3
**English			3
**Humanities			3
			17

Spring:

			Cr. Hr.
ANAT	110	Anatomy and Physiology	4
SOC	151	Introduction to the Study of Society	3
OTA	110	Interpersonal Relations and Group Dynamics	3
OTA	120	O. T. Theory and Application: Life Skills	4
*OTA	120L	O. T. Theory and Application: Life Skills Lab	1
HF	103	First Aid	1
HF	110	Basic Nutrition	1
			17

Second Year

Fall:

			Cr. Hr.
ANTH	150 or 200		3
OTA	200	Therapeutic Modalities	3
OTA	210	O. T. Theory and Application: Physical Dysfunction	4
*OTA	210L	O.T. Theory and Application: Physical Dysfunction Lab	1
PSY	100	Survey of Psychology	3
**Speech			3
			17

Spring:

			Cr. Hr.
OTA	220	O. T. Theory and Application: Psycho-social Dysfunction	4
*OTA	220L	O. T. Theory and Application: Psycho-social Dysfunction Lab	1
OTA	230	O. T. In Comprehensive Community Health	3
PSY	110	Psychology of Adjustment	3
**Mathematics			3
Elective			3
			17

*Clinical courses conducted in affiliated Occupational Therapy Departments

**Must be courses numbered 100 or above

Summer:

			Cr. Hr.
*OTA	240	O. T. Field Work: Physical Dysfunction	3
*OTA	241	O. T. Field Work: Psycho-social Dysfunction	3
			6
		Total	74

*Clinical courses conducted in affiliated Occupational Therapy Departments

Course Description:

OTA 100 Orientation to Occupational Therapy (4) Fall
4 hours lecture per week. Prerequisites: Admission to the Occupational Therapy Assistant Program. Co-requisites: OTA 100L

Introduction to the Occupational therapy profession: history, theory, organization, administration, practice. Role of the registered occupational therapist and certified occupational therapy assistant in relation to other health professions and health care delivery systems.

OTA 100L Orientation to Occupational Therapy Lab (1) Fall
4 hours laboratory per week. Pre-requisites: Admission to the Occupational Therapy Assistant Program. Co-requisites: OTA 100

Field trips to and participation in selected community occupational therapy programs, integrated with OTA 100 content, supervised by registered occupational therapists and instructor.

OTA 110 Interpersonal Relations and Group Dynamics (3) Fall
3 hours class per week.

A course to develop understanding and skills in interpersonal relationships, self awareness, process and techniques of group dynamics, verbal and non-verbal communication as applied in occupational therapists and instructor.

OTA 120 Occupational Therapy Theory and Application:
Life Skills (4) Spring
4 hours class per week. Pre-requisites: OTA 100, OTA 100L. Co-requisite: OTA 120L

Analysis of life skills from infancy through aging to include activities of daily living, recreation and leisure; activity theory; task analysis and work simplification; techniques of teaching life skills as applied in occupational therapy practice.

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OTA 120L Occupational Therapy Theory and Application:
Life Skills Lab (1) Spring
4 hours laboratory per week. Pre-requisites: OTA 100, OTA 100L. Co-requisites: OTA 120

Participation in selected community occupational therapy programs, applying OTA 120 content in a patient treatment setting, supervised by registered occupational therapists and instructor.

OTA 130 Therapeutic Modalities (4) Spring
4 hours class per week. Pre-requisites: OTA 100, OTA 100L, ART 100. Co-requisites: OTA 120, OTA 120L.

Basic skills in major media and its application in occupational therapy: leatherwork, weaving, woodwork, metalwork, ceramics. Emphasis upon materials, process, equipment, tools, storage, maintenance, therapeutic application of modalities to major dysfunctional categories.

OTA 210 Occupational Therapy Theory and Application:
Physical Dysfunction Fall
4 hours class per week. Pre-requisites: OTA 120, OTA 120L, ANAT 110. Co-requisites: OTA 210L

Theories and techniques of occupational therapy for physical dysfunctional conditions from a developmental approach; conditions of physical dysfunction common to each developmental level; use of activities and media as applied in occupational therapy pracitce.

OTA 210L Occupational Therapy Theory and Application:
Physical Dysfunction Lab (1) Fall
4 hours of laboratory per week. Pre-requisites: OTA 120, OTA 120L, ANAT 110. Co-requisites: OTA 210

Participation in selected community occupational therapy programs, applying OTA 210 content in a patient treatment setting, supervised by registered occupational therapists and instructor.

OTA 220 Occupational Therapy Theory and Application:
Psycho-social Dysfunction Spring
4 hours class per week. Pre-requisites: OTA 110, OTA 120, OTA 120L, PSY 100. Co-requisites: OTA 220L, OTA 230.

Theories and techniques of occupational therapy for mental health and psycho-social dysfunctional conditions from a developmental approach; conditions common to each developmental level; use of activities and media as applied in occupational therapy practice.

OTA 220L Occupational Therapy Theory and Application:
Psycho-Social Dysfunction Lab (1) Spring
4 hours laboratory per week. Pre-requisites:
OTA 110, OTA 120, OTA 120L, PSY 100. Co-requisites:
OTA 220, OTA 230

Participation in selected community occupational therapy programs, applying OTA 220 content in a patient treatment setting, supervised by registered occupational therapists and instructor.

OTA 230 Occupational Therapy in Comprehensive Community Health (3) Spring
3 hours class per week. Pre-requisites: OTA 210,
OTA 210L. Co-requisites: OTA 220, OTA 220L.

The role of occupational therapy in comprehensive community health through study of social and health care delivery systems; principles of prevention; health care advocacy; influence of values, attitudes and belief systems on health care; field trips to selected occupational therapy community health programs.

OTA 240 Occupational Therapy Practicum: Physical
Dysfunction (4) Summer
40 hours per week for 4 weeks. Prerequisites: OTA 210, 210L

Clinical practice of occupational therapy techniques for physical dysfunction in local occupational therapy departments under the supervision of a registered occupational therapist.

OTA 241 Occupational Therapy Practicum: Psycho-Social
Dysfunction (4) Summer
40 hours per week for 4 weeks. Prerequisites: OTA 220, 220L

Clinical practice of occupational therapy techniques for mental health and psych-social dysfunction in local occupational therapy departments under the supervision of a registered occupational therapist.

RADIOLOGIC TECHNOLOGY PROGRAM

First Year

Fall:

			Cr. Hr.
ENG	100	Expository Writing	3
MATH	120	College Algebra	3
ANAT	110	Human Anatomy and Physiology	4
RTECH	100	Introduction to Radiologic Technology	3
RTECH	140	Hospital Radiographic Technique	2
RTECH	148	Radiography Seminar	1
			16

Spring:

SP	145	Expository and Persuasive Speaking	3
RTECH	110	Radiologic Techniques	3
RTECH	120	Radiologic Physics	3
RTECH	130	Topographic Anatomy	1
RTECH	141	Hospital Radiographic Techniques	2
RTECH	149	Radiography Seminar	1
			13

Summer:

RTECH	150	Radiography Seminar	2
RTECH	142	Hospital Radiographic Technique	2
			4

Second Year

Fall:

PSY	100	Survey of Psychology	3
RTECH	200	Advance Radiologic Positioning	3
RTECH	210	Advance Radiologic Technique	3
RTECH	240	Hospital Radiographic Technique	2
RTECH	248	Radiography Seminar	1
			12

Spring:

		*Elective	3
		Life or Physical Science	3
		Humanities	3
RTECH	220	Departmental Administration	1
RTECH	230	Special Radiographic Procedures	3
RTECH	241	Hospital Radiographic Technique	2
RTECH	249	Radiography Seminar	1
			16

*Courses numbered 100 or above

Summer:

RTECH 250	Radiotherapy and Nuclear Medicine	2
RTECH 242	Hospital Radiographic Technique	2
		4

Course Description:

RTECH 100 Introduction to Radiologic Technology (3) Fall
3 hours lecture per week
Co-requisite: RTECH 140

Orientation to radiologic technology. Includes ethics, darkroom chemistry and technique, elementary radiographic positioning, and elementary radiographic exposure principles.

RTECH 110 Radiologic Technique (3) Spring
3 hours lecture per week
Prerequisite: RTECH 100 with minimum of C or consent of instructor
Concurrent registrartion in RTECH 141

Continuation of RTECH 100. Includes nursing procedures pertinent to radiology.

RTECH 120 Radiological Physics (3) Spring
3 hours lecutre per week
Prerequisites: MATH 120 or consent of instructor

The fundamentals of electrical and radiation physics, the basic principles underlying the operation of radiologic equipment, and radiation biology and protection.

RTECH 130 Topographic Anatomy (1) Spring
1 hour lecture per week

Radiologic anatomy emphasizing surface landmarks and the relationships of organs to one another.

RTECH 148 Radiography Seminar (1) Fall
1 hour lecture per week

Problems seminar: general radiographic technique with critiques of films taken in RTECH 140.

RTECH 149 Radiography Seminar (1) Spring
1 hour lecture per week

Problems seminar: general radiographic technique with critiques of films taken in RTECH 141.

RTECH 150 Radiography Seminar (2) Summer

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2 hours lecture per week
Prerequisite: RTECH 110 with minimum of C
Concurrent registration in RTECH 142

Problems seminar: general radiographic technique with critiques of films taken in RTECH 142.

RTECH 200 Advanced Radiologic Positioning (3) Fall
3 hours lecture per week
Prerequisites: RTECH 142, 150
Concurrent registration in RTECH 240

Advanced radiographic positioning.

RTECH 210 Advanced Radiologic Technique (3) Spring
3 hours lecture per week
Prerequisites: RTECH 142, 150

Advanced principles of radiographic exposure, procedures using contrast material, pediatric radiography, survey of diseases and injury and their relationship to radiologic technology.

RTECH 220 Departmental Administration (1) Spring
1 hour lecture per week

A study of administrative procedures, personnel management, and the legal and financial aspects of radiology.

RTECH 230 Special Radiographic Procedures (3) Spring
3 hours lecture per week
Prerequisites: RTECH 200, 210
Concurrent registration in RTECH 241

Special radiographic procedures including intraoral radiography.

RTECH 248 Radiography Seminar (1) Fall
1 hour lecture

Problems seminar: advance film critique stressing procedures using contrast material; pediatric radiography.

RTECH 249 Radiography Seminar (1) Spring
1 hour lecture per week

Problems seminar: advance film critique stressing films made during special precedures.

RTECH 250 Radiotherapy and Nuclear Medicine (2) Summer
2 hours lecture per week
Prerequisite: RTECH 120

Theories and principles relating to radiation therapy and nuclear medicine.

Hospital Radiographic Technique

Courses in this area provide experience in the Radiology Department of a cooperating hospital. These experiences include observation of and practice in positioning the sick and injured patient, obtaining the exact radiograph requested by the physician, and assisting in the treatment of disease. Film exposure time, film manipulation, and the finished radiography are critically studied. Throughout the two academic years and interim summer certain approved radiographs must be completed. These by location include radiographs of Extremities, Gastrointestinal Tract, Urinary Tract (intravenous and retrograde pyelograms, urethograms), Skull (sinuses, facial bones, mandible), Spine, pelvis (hips, hip-nailing), Shoulder, Thoracic Cage and Cavity (lungs, heart, and sternum).

RTECH 140 Hospital Radiographic Technique (2) Fall
21 hour lab per week

Practice in positioning, radiographic exposure, and film critique in the Radiology Department of a cooperating hospital.

RTECH 141 Hospital Raiographic Technique (2) Spring
22 hour lab per week

Practice in positioning, radiographic exposure, and film critique in the Radiology Department of a cooperating hospital.

RTECH 142 Hospital Radiographic Technique (2) Summer
38 hour lab per week

Summer practice in radiographic technique and film critique.

RTECH 240 Hospital Radiographic Technique (2) Fall
24 hour lab per week

Practice in advanced radiographic technique and film critique.

RTECH 241 Hospital Radiographic Technique (2) Spring
23 hour lab per week

Practice in advanced radiographic technique and film critique.

RTECH 242 Hospital Radiographic Technique (2) Summer
37 hour lab per week

Summer practice in advanced radiographic technique and film critique.

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RESPIRATORY THERAPY PROGRAM

First Year

Fall:

			Cr. Hr.
RESP	110	Resp. Ther. Theory I	4
RESP	100L	Resp. Ther. Techniques I	5
BIOL	110	Anatomy and Physiology	3
		Health Foundations	5
			17

Spring:

			Cr. Hr.
RESP	111	Resp. Ther. Theory II	4
RESP	111L	Resp. Ther. Techniques II	5
ENG	100	Expository Writing	3
		Physical Science	3
		Health Foundations	5
			20

Summer:

			Cr. Hr.
RESP	130	Theory of Pul. Funct. Studies	2
RESP	130L	Pul. Funct. Studies Lab	1
			3

Second Year

Fall:

			Cr. Hr.
RESP	212	Resp. Ther. Theory III	4
*RESP	212L	Resp. Ther. Techniques III	5
PSY	100	Survey of Psychology	3
MATH	100	Survey of Mathematics	3
			15

Spring:

			Cr. Hr.
RESP	213	Resp. Ther. Theory IV	4
*RESP	213L	Resp. Ther. Techniques IV	5
		Humanities	3
		Speech	3
			15

Summer:

			Cr. Hr.
RESP	231	Resp. Ther. Theory Seminar	1
*RESP	231L	Resp. Ther. Techniques	3
			4
		Total	74

*Clinical courses conducted in affiliated community hospitals

Course Descriptions:

RESP 110 Respiratory Therapy Theory I (4) Fall
4 hours lecture per week
Prerequisite: Admission to the Respiratory Therapy Program
Corequisite: RESP 110L

Introduction to Respiratory Therapy and the theory of administration of therapeutic medical gases.

RESP 110L Respiratory Therapy Technique I (5) Fall
15 hours laboratory per week
Prerequisite: Registration in RESP 110; Corequisite: RESP 110

A course dealing with basic Respiratory Therapy techniques in application and equipment. Laboratory practice with oxygen cylinders, flow-meters, regulators, oxygen tents and all modalities for delivery of oxygen and humidity, stressing safety precautions in handling.

RESP 111 Respiratory Therapy Theory II (4) Spring
4 hours lecture per week
Prerequisites: RESP 110 with grade of C or consent of instructor; Corequisite: RESP 111L

Continuation of Respiratory Therapy 110 encompassing theory of resuscitaiton and use of respirators and ventilators.

RESP 111L Respiratory Therapy Technique II (5) Spring
15 hours laboratory per week
Prerequisites: RESP 110L with grade of C or consent of instructor
Corequisite: RESP 111

Introduction to pressure respirators, manual resuscitators and proper resuscitative techniques. Analysis of equipment construction and requirements. Blood gas analysis, pulmonary physiotherapy and nursing arts.

RESP 130 Pulmonary Function Theory (2) Summer
5 hours lecture per week
Prerequisite: RESP 111 with grade of C; Corequisite: RESP 130L

Theory of Pulmonary Function Studies.

RESP 130L Pulmonary Functions Techniques (1) Summer
9 hours laboratory per week
Prerequisite: RESP 111L with C average; Corequisite: RESP 130

Pulmonary Function Studies taught in the laboratory setting.

RESP 212 Respiratory Therapy Theory III (4) Fall
4 hours lecture per week
Prerequisite: RESP 130 with grade of C; Corequisite: RESP 212L

Comprehensive and Intensive Respiratory Theory.

RESP 212L Respiratory Therapy Clinical I (5) Fall
22½ hours laboratory per week
Prerequisite: RESP 130L with grade of C; Corequisite: RESP 212

All of the previously learned techniques will be observed and practiced under close supervision of instructor in a community hospital cooperating in the program.

RESP 213 Respiratory Therapy Theory IV (4) Spring
4 hours lecture per week
Prerequisite: RESP 112 with C average; Corequisite: RESP 213L

Neonatal, Pediatric and emergency Respiratory Therapy.

RESP 213L Respiratory Therapy Clinical II (5) Spring
22½ hours laboratory per week
Prerequisite: RESP 112L with grade of C; Corequisite: RESP 213

Students learn special Respiratory Therapy Technique applicable to pediatrics and emergency room situations in a clinical setting.

RESP 231 Respiratory Therapy Seminar (1) Summer
2 hours lecture per week
Prerequisite: RESP 113 with grade of C; Corequisite: RESP 231L

Problems Seminar.

RESP 231L Respiratory Therapy Clinical III (3) Summer
22 hours laboratory per week
Prerequisite: RESP 113L with grade of C; Corequisite: RESP 131

Advanced clinical study.

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